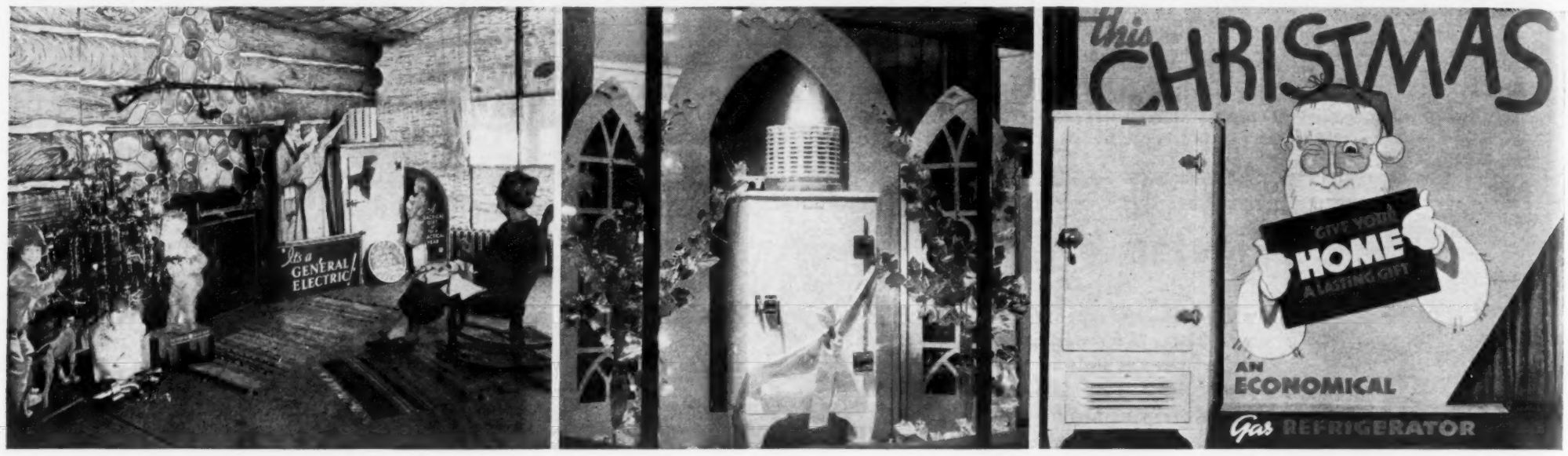
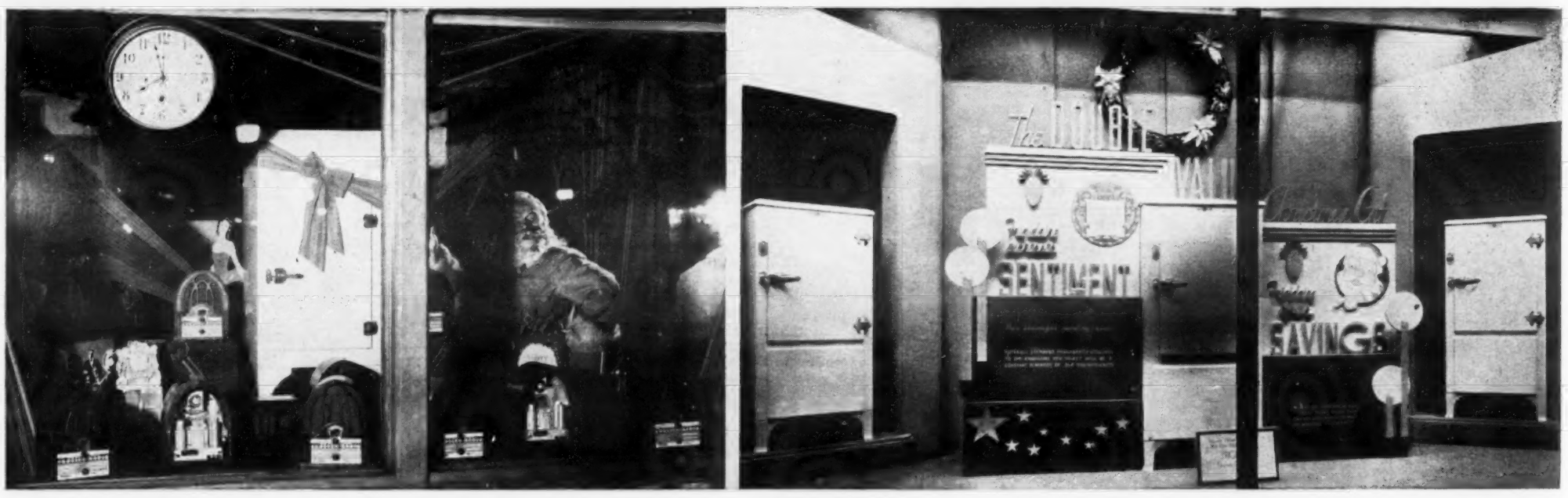
Dealers: Here are Some Ideas for Your Christmas Window Displays

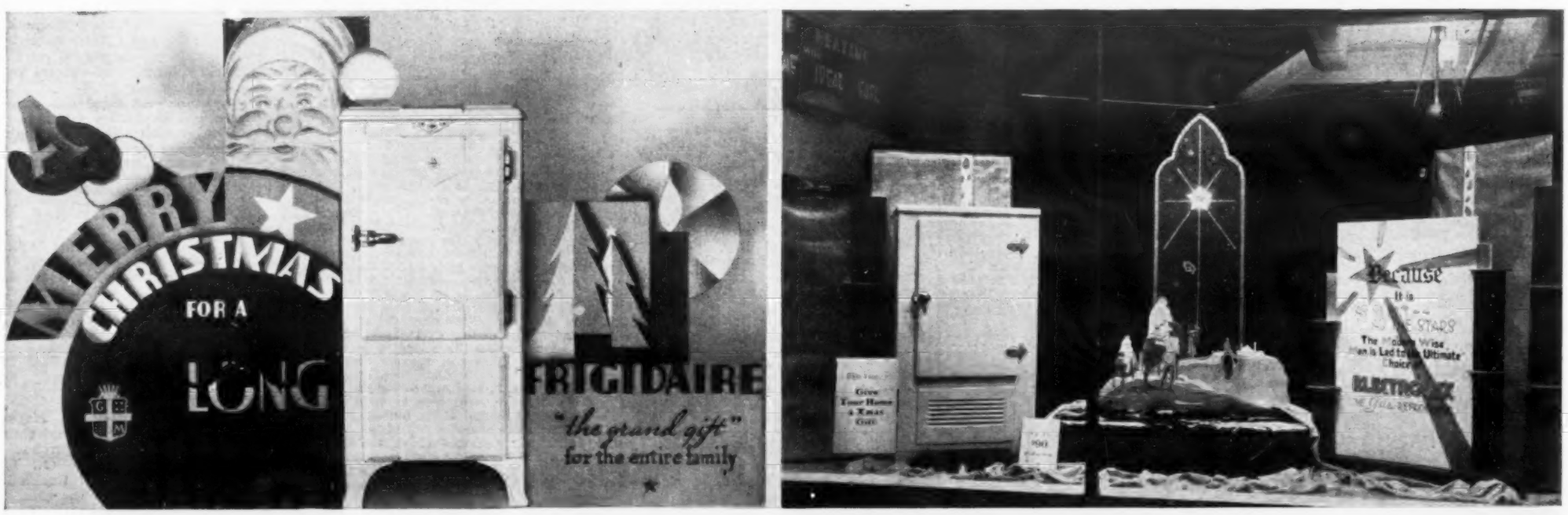


Tying Up the Santa Claus Spirit with the Economy Motive



Proper Lighting Will Make Holiday Window Displays More Effective

The 'Wise Christmas Gift' Story Told Visually by Simple Settings



THE NEWSPAPER OF THE INDUSTRY

ELECTRIC REFRIGERATION NEWS

WRITTEN TO BE READ ON ARRIVAL

Registered U. S. Patent Office

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THREE DOLLARS PER YEAR
TEN CENTS PER COPY

MILLION REFRIGERATORS SOLD IN TEN MONTHS

REFRIGERATION WEEK PRIZE WON BY KANSAS CITY

Publicity Campaign on Refrigeration Wins Commendation

NEW YORK CITY—Electric and Radio Association of Kansas City has been awarded first prize of $500 in the recent contest sponsored by the national Electric Refrigeration Bureau to find the most successful electric refrigeration show held during National Electric Refrigeration Week, Oct. 31 to Nov. 7.

In announcing their decision, the judges commended particularly the association's campaign of refrigeration publicity prior to and during the show. This campaign consisted of newspaper, radio, window display, and poster advertising, together with a puzzle contest for the public.

Other cash prizes, six in number, were awarded as follows:

Second prize, $250, to the San Antonio Electric Refrigeration Bureau, San Antonio, Tex.

Third prize, $150, to the San Diego County Electric Refrigeration Bureau, San Diego, Calif.

Fourth prize, $100, to the Electrical

(*Concluded on Page 2, Column 4*)

5,000 ATTEND SETH PARKER BROADCAST

PORTLAND, Me., Dec. 5.—(Special Wire to ELECTRIC REFRIGERATION NEWS)—More than 25,000 residents of Maine passed through or inspected from the Maine state pier the four-masted schooner *Seth Parker* as guests of Frigidaire Corp. during the last three days, and Frigidaire has made arrangements to handle 5,000 spectators tonight at the inaugural broadcast from the deck of the ship.

Crowds were so dense Sunday afternoon that police and fire reserves were summoned. Automobile traffic was jammed for hours.

Admission to boat and pier was by tickets issued through Frigidaire dealers throughout Maine.

Boston will be given three days for inspection next week-end. Fifty thousand visitors are expected.

ENGINEERS WILL STUDY RAILROAD CONDITIONING

NEW YORK CITY—Why the railroads are spending $4,000 to $8,000 per car to offer the conveniences of conditioned air on their better trains, how unit coolers are being designed and built for offices, stores, and homes, the physiological requirements for effective air conditioning—these are some of the problems up for discussion this week before the American Society of Refrigerating Engineers which is holding its 29th annual meeting this week at the Hotel New Yorker.

Future Home of the News

DETROIT—Business News Publishing Co. will soon move to a handsome home of its own located at 5229 Cass Ave., a short distance from the Maccabees building where the company has grown up during the past seven years.

The new location is directly opposite the Detroit Public Library and faces the beautiful Art Center Plaza which lies midway between the General Motors district and the downtown business section of the city. Cass Ave. is one block west of Woodward Ave., the main north-and-south thoroughfare of Detroit.

Offices of the editorial and advertising departments will be housed in the 20-year-old stone mansion pictured above. Plans have been drawn for a new steel-and-concrete addition in the rear which has been specially designed to meet the needs of printing, mailing, and other mechanical operations.

The ground plot is unusually spacious and provides ample room for any sort of future expansion which may be required. The frontage on Cass Ave. is 150 feet, with a depth of 145 feet, making a total area of 21,750 square feet.

The old building, for many years the residence of a millionaire contractor, is in excellent condition. The exterior is of cut stone, with walls 18 inches thick. Heavily framed and solidly built, it is a fine example of pre-war construction methods. Numer-

(*Concluded on Page 2, Column 5*)

ELECTROLUX MOVES RESEARCH QUARTERS

NEW YORK CITY—Removal of Electrolux refrigerator laboratories and research activity from New York City to the Evansville, Ind., manufacturing plant was announced last week by F. E. Sellman, vice president of the company.

"Sales volume during 1933 and our program for next year pointed to the need for bringing research activity closer to plant and distribution centers," Mr. Sellman said.

The Electrolux laboratories were formerly located at 408 E. 111th St., New York City. Much of the testing, however, was carried on in the engineering department at the Evansville plant.

The laboratories are staffed by 30 research engineers under the direction of Dr. William R. Hainsworth.

Maginniss to Manage Majestic Division

CHICAGO—T. H. Maginniss has been appointed manager of the northern Illinois sales division of Grigsby-Grunow Co., succeeding Arthur Alter, who resigned from that position Nov. 25.

Commercial News

Featured in this issue of Electric Refrigeration News are many interesting commercial installations made during the past season. On pages 7, 9, 13, and 16 are descriptions of a number of installations, giving details on both the equipment and the purposes it serves.

Pages 10, 11, and 20 are filled with pictures showing installations of commercial equipment for a wide variety of applications. On page 17 are several announcements of new products of interest in the commercial refrigeration field.

FIRST AID IS STUDIED BY CHICAGO ENGINEERS

CHICAGO—Members of Chicago sections of the American Society of Refrigerating Engineers and the National Association of Practical Refrigerating Engineers will hold a joint meeting tonight (Dec. 6).

Dr. H. W. Gentles, chairman of first aid and life saving of the American Red Cross, will speak on "The Safety Man and First Aid." Commander Fallon of the Red Cross first aid corps will give a practical demonstration of first aid methods, assisted by the Illinois Bell Telephone safety corps.

Allen Named Southern Manager by G-E

CLEVELAND—T. B. Allen has been appointed Southern manager of the electric refrigeration department of General Electric Co. here, according to P. B. Zimmerman, manager of the department.

Mr. Allen has established headquarters in the Red Rock building, Atlanta, with the General Electric district office there, and will have charge of the field relations with the following G-E distributors:

Hines Co., Baltimore; National Electrical Suplpy Co., Washington, D. C.; R. S. Montgomery, Inc., Richmond, Va.; W. D. Alexander Co., Atlanta; George Patterson, Inc., St Petersburg, Fla.; Perry-Browne, Inc., Columbia, S. C.; Tennessee Appliances, Inc., Nashville, Tenn.

MORE DISTRIBUTORS VISIT KELVINATOR

DETROIT—Kelvinator Corp. this week is holding the third of its annual series of meetings for groups of distributors and district managers to inform them on sales programs for 1934. This series of small-group meetings is used instead of one large convention.

Attending the meeting this week are the following:

M. H. Kirchbaum, Sioux City, Iowa; A. Graham, Tri-State Electric Co., Sioux Falls, S. D.; L. C. Wiswell, Chicago; Paul Fuqua, East Tennessee Electric Co., Knoxville, Tenn.; S. M. Stewart, Tidewater Electric Co., Norfolk, Va.; L. S. Hodges, Kirkmyer Electric Co., Richmond, Va.

Fred Bottom, Automobile Sales Co., Memphis, Tenn.; Roy Steuber, 555, Inc., Little Rock, Ark.; W. T. McNerney and W. L. Englebrecht, Brown Camp Hardware Co., Des Moines, Iowa; W. Mueller and M. W. Andresen, Mueller Lumber Co., Davenport, Iowa; A. D. Barber, Graybar Electric Co., Omaha, Nebr.

Paul Jones, Jones Cornett Electric, Welch, W. Va.; Lester Cox, Ozark Motor & Supply, Springfield, Mo.; C. E. Willert, Morley Murphy Co., Milwaukee; W. S. Stiles and W. E. Bodart, Morley Murphy Co., Green Bay,

(*Concluded on Page 2, Column 1*)

NEW RECORD SET DESPITE POOR FIRST QUARTER

Only 40 Manufacturers Figure in Totals; New York Leads

Upsetting all the dope, the electric refrigeration industry has at last passed the million mark. During the first 10 months of 1933, a year nobody expected to be a winner, around 1,013,200 household electric refrigerators were sold by 40 American manufacturers, according to an estimate based on figures supplied to ELECTRIC REFRIGERATION NEWS by manufacturers and suppliers. This is an all-time record for the industry—a record established in spite of an extraordinarily poor showing in the first quarter of the year.

The NEWS estimate compares closely with the estimate of 1,010,245 arrived at by the Electric Refrigeration Bureau (see statistics on page 19).

Of the total figure of 1,013,200 refrigerators, 852,589 have been built by manufacturers who were members of the Refrigeration Division of the National Electrical Manufacturers Association at the beginning of 1933. This represents about 84 per cent of the total, as compared with 80 per cent allotted to Nema members in 1932.

The figure of 852,589 for the Nema companies does not include the sales figures of companies which joined the Nema group in the fall, such as Stewart-Warner, Sunbeam, Merchant & Evans, Uniflow, Wurlitzer, and Tricold. Other Nema members include Frigidaire, General Electric, Kelvinator, Norge, Westinghouse, Servel, Universal Cooler, Majestic, Crosley, Gibson, and Trupar.

In addition to the concerns listed above, figures on the production of the following manufacturers were included in the totals: Grunow, Sparks-Withington, Apex, Ilg, U. S. Radio & Television (now merged with Grunow), Landers, Frary & Clark, Heinz & Munschauer, Domestic Industries, O'Keefe & Merritt, Zerozone, Starr Freeze, Grinnell, Jomoco, Jewett, Liberty, Gurney, King Kold, Sanitary, White Mountain, Nome, International, Narragansett, and Williams.

In previous years the number of manufacturers represented in the totals has included twice, three, and four times as many makers as the 40 in the 1933 group.

To arrive at sales estimates for individual manufacturers outside the Nema organization, manufacturers whose production figures were not furnished to ELECTRIC REFRIGERATION NEWS representatives, suppliers of essential parts were consulted and their figures taken as the basis for estimate. The total thus arrived at is considered by the editors to be quite conservative.

According to Electric Refrigeration Bureau figures, the first 10 states of the country in order of the number of refrigerators sold within their borders are:

New York, 190,679; Pennsylvania, 99,362; Illinois, 69,614; Ohio, 66,087; California, 58,249; Massachusetts, 51,424; New Jersey, 47,598; Missouri, 35,783; Texas, 35,441; Michigan, 31,037.

Forced Brine Circulation is Feature Of New Beer Cooler

CHICAGO—A new beer cooler employing forced circulation of a glycerine brine system between beer coils and direct expansion refrigerant coils has just been announced by the Commercial Coil & Refrigeration Co. here. The cooler is to be known as the "indirect instantaneous liquid cooler," according to M. P. Fugle, designing engineer.

A new feature of the cooler is control of the beer temperature by means of a Penn thermostat (of the type used on household refrigerators) which regulates starting and stopping of a 1/20-hp. split-phase motor which propels the circulating device.

This arrangement eliminates all special control valves which would ordinarily be required on a multiple hook-up, since the gas temperature in the refrigerant coil does not control the liquid temperature, Mr. Fugle points out.

Also, by using a manual control, the beer cooler offers a range of nine different serving temperatures without readjusting the refrigerating machine. The brine holdover has been provided with the dry expansion coil to reduce short cycling of the machine.

As shown in the adjoining sectional drawing, the cooler is made up of two cylindrical tanks connected at top and bottom for circulation of the brine. Size of the cooler is 18 in. wide, 22½ in. high, and 9 in. deep.

In selecting a machine, Mr. Fugle suggests assuming an evaporator gas

(*Concluded on Page 2, Column 5*)

NRA May Regulate Sales Direct to Consumers by Wholesalers

WASHINGTON, D. C.—The selling of goods direct to consumers by wholesalers who also sell through retailers would be subject to regulation under "permissive" sections of the code of fair competition proposed for the wholesale trade, on which hearings have recently closed.

One of the permissive sections of the proposed code would provide that selling at wholesale prices to ultimate consumers through retailers is uneconomical and undesirable and may be prohibited.

Another section provides that in any division in which manufacturers sell coincidentally to several classes of buyers, such as wholesalers, retailers, and consumers, the divisional code authority may announce for each product or group of products distributed by its division price differentials between the different classes of buyers which shall be fair and reasonable.

After such differentials have been so announced, the code declares that it shall be an unfair trade practice for any wholesaler or distributor to buy such merchandise from any primary seller who does not maintain such differentials.

The code would divide the trade into at least 14 commodity divisions, which number might be increased whenever the administration might find a need for further subdivisions.

The general code would govern wholesalers in all commodity divisions, with wholesalers or distributors in one or more subdivisions operated under supplemental codes.

MORE DISTRIBUTORS VISIT KELVINATOR

(Concluded from Page 1, Column 4)

Wis.; Joe Schilling, Des Moines Electric Co., Des Moines, Iowa.

Mike Nolan, Iowa Electric Co., Cedar Rapids, Iowa; Harry Bayley, Interstate Electric Co., Dubuque, Iowa; George Perrine, Iowa Southern Utilities, Centerville, Iowa; Earl Sharpe and M. H. Buehler, Graybar Electric Co., Minneapolis; J. Learned and Mr. Leonard, Public Service of Northern Illinois, Chicago; Mr. Gebhart, Nebraska Power Co., Omaha.

Stan Tabor, Iowa-Nebraska Power Co., Lincoln, Nebr.; W. Moore and C. Dellinger, Moore & Stewart, Inc., Gastonia, N. C.; J. T. Little, Carolina Kelvinator Co., Greenville, N. C.; J. E. Woodmansee and Mr. Lancaster, Richards & Conover Hardware Co., Kansas City, Mo.

R. C. Houck, Witte Hardware Co., St. Louis; Cecil Preshaw, Missouri Power & Light Co., Kansas City, Mo.; Roy Swann, Kenneth Adams, Charles Marvin, and C. J. Hamm, all of Isaac Walker Hardware, Peoria, Ill.

N. C. Christopherson and F. A. Coffin, Milwaukee Electric Light & Power Co., Milwaukee; Roscoe Guilbert, Wisconsin Gas & Electric Co., Racine, Wis.; Mr. Phenecie and Earl Prain, Wisconsin Public Service, Milwaukee; Herman Hueglin, Federal Merchandise, Chicago.

J. W. Busch, Illinois Power & Light. E. St. Louis, Ill.; R. T. Purchas and V. H. Moon, Middle West Utilities, Chicago; O. R. Hogue, G. S. Howland, W. T. Reace, and F. Fuller, all of Commonwealth Edison Co., Chicago; Ben Baldwin, Minnesota Power & Light, Duluth, Minn.

A. E. Swartz and W. Hayes, Montana-Dakota Power & Light, Minneapolis; H. G. Huey, S. S. Shaver, Messrs. White, Loomis, and Wetz, all of Northern States Power, Minneapolis; H. Keys and W. M. Hodges, Byllesby Management Corp., Chicago.

C. J. Strike, B. J. Palm, and F. J. Elvig, all of Northwestern Public Service, Huron, S. D.; M. E. Skinner, Niagara Hudson Power & Light, New York City; B. W. Little, Southern Public Utilities, Charlotte, N. C.; Raymond Rosen, Raymond Rosen, Inc., Philadelphia; L. Weiss and Mr. Thomas, Metropolitan Edison, Reading, Pa.

Messrs. Whitwell and Monty, Philadelphia Electric Co., Philadelphia; D. T. Lansing, Scranton, Pa.; J. P. Connolly and A. D. LaRoche, South Carolina Power Co., Charleston, S. C.; C. L. Goodwin, Durham Public Service, Durham, N. C.; E. Leier, Broad River Power Co., Columbia, S. C.

T. F. Drew, Carolina Power & Light, Raleigh, N. C.; H. F. Smiddy, Electric Bond & Share, New York City; Fred Luecke, Missouri Public Service, Warrensburg, Mo.; C. E. Michel, Union Electric Light Co., St. Louis; M. R. Rodger, Central Illinois Public Service, Springfield, Ill.

Prize-Winning Refrigeration Show

National Electric Refrigeration Bureau awarded first prize, $500 in cash, to the Electric & Radio Association of Kansas City, Mo., for sponsoring this exposition from Oct. 3 to 7.

League Manager Wins McGraw Award

CLEVELAND—The James H. McGraw Award, presented annually to the individual deemed to have done the year's outstanding job of promoting the use of electricity is to go this year to John North, manager of the Electrical League of Cleveland.

BUREAU NAMES WINNERS OF SHOW COMPETITION

(Concluded from Page 1, Column 1)

Association of New Orleans.

Fifth prize, $75, to the Electrical League of South Jersey, Camden, N. J.

Sixth prize, $50, to the Essex Electrical League, Newark, N. J.

Seventh prize, $25, to the Spokane Electric Refrigeration Bureau, Spokane, Wash.

Honorable mention was awarded to the Electric Refrigeration Bureau of Petersburg, Va., the Electric Refrigeration Bureau of Elizabeth, N. J., and the Electric Refrigeration Bureau of Claremont, N. H.

Judges of the contest were H. M. Faust, New York manager of the Curtis Publishing Co.; L. H. Curtice of the National Electrical Manufacturers Association; and Ralph Neumuller, manager of the Electrical Association of New York.

This was the first time that the Electric Refrigeration Bureau had ever sponsored a contest of this character in connection with its annual Electric Refrigeration Week.

3 G-E Cases Installed in Grocery Store

COLUMBUS, Ohio—Three General Electric "conditioned air" display cases, operated by a CM-8W condensing unit, have been installed in the grocery store of T. E. Davis, Jr., here by Bard & Barger, Inc., G-E distributor in this city. Model numbers of the cases are HDS-124, CS-450, and CS-601, according to Gail Thompson, commercial manager of the distributorship.

SLYE MADE TREASURER OF W. L. THOMPSON, INC.

BOSTON—B. F. Slye has joined W. L. Thompson, Inc., General Electric distributor here, as treasurer of that organization, according to G. M. Craig of the Thompson company.

Mr. Slye has been connected with the General Electric Co. for 11 years, for the past two years as assistant to Cedric Smith, manager of the credit and financial divisions of G-E's refrigeration department in Cleveland.

NEWS' FUTURE HOME BEING MODERNIZED

(Concluded from Page 1, Column 4)

ous wide windows make it particularly suitable for business purposes.

The house is now filled with carpenters, plumbers, plasterers, electricians, painters, etc., who are making the necessary alterations to transform the interior from a residence to a business plant.

Most important is the installation of a complete system of ducts for summer and winter air conditioning in every room. The ceiling of the entire third floor is being insulated, new streamline copper water pipes are being put in, conduits for telephone and signal circuits and numerous gadgets for efficient operation of an office are being added.

Contracts for building the new portion have not yet been let. Special study will be made of various materials and appliances in an effort to obtain the most modern equipment on the market. In addition to efficiency and economical operation, the aim is to obtain a plant which will represent the latest developments, especially in the field of refrigeration and air conditioning.

Example of Air Conditioning

When completed, the buildings will present an interesting study of the possibilities of air conditioning in a variety of applications. There will be old and new construction, home, office, and industrial plant usage. The home will be represented by a complete apartment on the third floor, which will be occupied by the production manager and his wife (also a member of the staff). Above the four-car garage is an attractive six-room apartment which will become the living quarters of three bachelor members of the editorial staff.

The present plans call for retention of the kitchen on the first floor of the main building so that it may be all electrically equipped for original home-service experimentation and food preservation research.

With the new and spacious offices, it is expected that the headquarters of ELECTRIC REFRIGERATION NEWS, REFRIGERATED FOOD NEWS, and the REFRIGERATION DIRECTORY will become, more than ever, one of the centers of interest for the hundreds of refrigeration men and women who visit Detroit every year.

Provision is being made for an extensive library of refrigeration literature, and plans are being worked out for a comprehensive system of indexing for files of information covering every activity in the refrigeration industry.

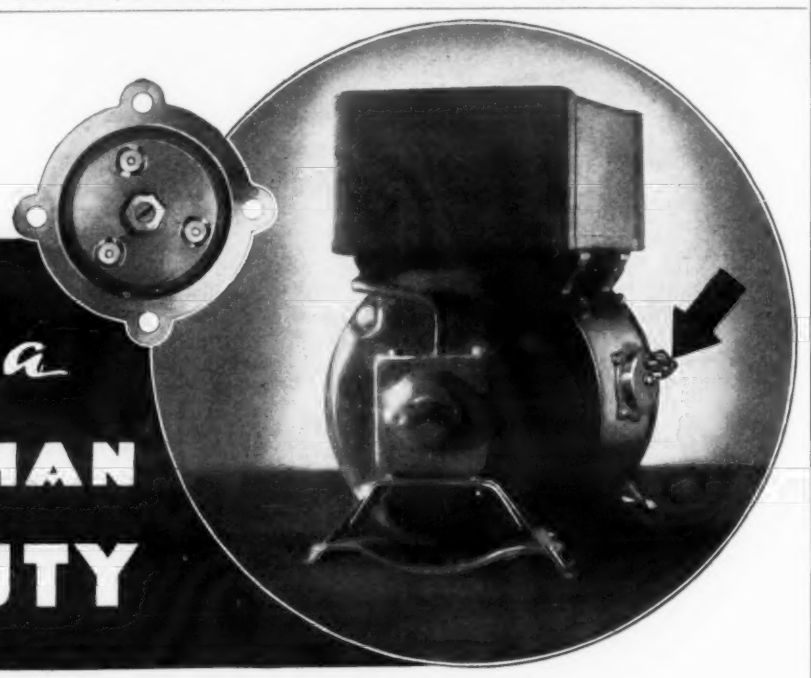
Further details regarding interesting features of the new home of the NEWS will be pictured and explained in later issues.

COMMERCIAL COIL BRINGS OUT BEER COOLER

(Concluded from Page 1, Column 2)

temperature of 30° F., although it may be operated at temperatures as low as 10° F. if desired. In a multiple installation, the machine capacity must be computed on the basis of the temperature necessary in the coldest coil, of course.

With a ½-hp. methyl chloride machine, Mr. Fugle claims to have drawn 9 gals. of beer in 15 minutes with a 12° temperature difference. This was partly due to reserve holdover built up in the brine during the "off" period.



in this Westinghouse

REFRIGERATOR MOTOR

● ALWAYS on the job . . . always alert . . . there's a vigilant watchman on duty in this refrigerator motor by Westinghouse . . . a watchman that prevents damage, making it impossible for the motor to burn out.

This watchman is a sensitive thermostat. While the motor temperature is within safe limits it remains "on." But, when an abnormal condition causes the motor to heat excessively, endangering the windings . . . click . . . the motor stops . . . and it starts again, automatically, only after the danger is past.

Think what this self-protection means! How much would you save in a year's time through the elimination of the expensive servicing costs that result from overheated motor windings?

The Westinghouse Thermoguard motor was planned and built expressly for refrigerators. In addition to self-protection from overheating, it has such important sales features as: Elimination of end-play noises and a new type resilient mounting which assure permanently quiet operation . . . a highly efficient mechanism which requires only a minimum amount of power for operation . . . a thoroughly effective oiling system, and a surprising simplicity of design. It is the motor you want in *your* refrigerator . . . whether you are maker, seller or user!

Westinghouse

Refrigerator Motors

THIS BRINGS INFORMATION

Westinghouse Electric & Manufacturing Company
Room 219—Springfield, Mass.
Gentlemen:
Send us complete, detailed information on the Westinghouse Thermoguard Motor, especially designed for refrigerators.

Name.....
Company.....
Position.....T 79747
Address.....ERN 12-6-33

Great Demand For LARKIN BOTTLED BEER COIL

BOTTLED beer can now be sold at just the desired temperature. The new LARKIN Vertical Surface Coil with brass spring slotted sleeves keeps the bottles in constant contact with the coils and the bell tops avoid any scraping or tearing of the labels. Sold in units holding one case of twenty-four bottles or larger. These Larkin coils are adjustable to any low temperature refrigeration system.

Send for detailed information and prices and win greater sales with the new LARKIN Bottled Beer Coil.

LARKIN
Refrigerating Corporation
Originator and Manufacturers
ATLANTA, GA., U.S.A.

WAREHOUSES
Brooklyn - Chicago

NRA WE DO OUR PART

100% VERTICAL SURFACE

U.S. PATENT No. 1,776,238.

LARKIN COILS

SEE WHY THE FRIGIDAIRE FRANCHISE HAS BROUGHT SUCCESS TO HUNDREDS OF DEALERS

When considering what refrigerator to sell in 1934, we suggest that you carefully weigh the opportunities offered in the Frigidaire franchise.

First, you'll be selling the refrigerator which is the acknowledged leader in its field . . . *a million more in use than any other make.* And its popularity continues to grow. For Frigidaire sales in 1933 have been spectacular . . . a record volume of business which has brought *real profit to Frigidaire dealers.*

Nor is that all. Frigidaire offers conveniences and refinements all of which have a powerful appeal to customers.

And back of this outstanding product is a plan of cooperation based upon a thorough understanding of the dealers' needs in the way of sales and merchandising helps, advertising and the training of his salesmen. And this cooperation is applied to Frigidaire's complete line of refrigeration equipment. It paves the way for bigger profits.

It's a program that has already proved its effectiveness in building business for dealers in 1933. And this tried and tested plan, revised to meet changing conditions, is now ready for any refrigeration dealer who wants to do a bigger business and make more money in 1934.

Here's a profit opportunity you can't afford to miss. Let us give you the facts before you decide upon your plans for next year. Frigidaire Corp., Dayton, O.

Frigidaire

A GENERAL MOTORS VALUE

BY GEORGE F. TAUBENECK - - -

Yankee Hospitality

From GEORGE LEHLEITNER, enterprising refrigeration sales manager of Stauffer, Eshleman & Co., Norge distributor in New Orleans, comes an amusing letter relating some of his experiences in Detroit at the Norge convention not long ago. A broken ankle forced George to attend the convention on crutches. Let him tell one of the anecdotes in his own language:

"I hopped out of the hotel in search of a news dealer who carried the New Orleans *Times-Picayune*. Finally found one, but in so doing I became somewhat twisted about and wasn't quite sure that I knew the direction in which the Detroit-Leland hotel lay.

"Seeing two middle-aged ladies approaching, I resolved to ask the way from them, and hobbled over on my crutches. But before I could open my mouth to say more than:

"'I beg pardon, ladies, but—'

"I was rebuffed with a cold:

"'No, nothing for you—there are too many of you beggars on the streets!'

"And so that's your Yankee hospitality, huh?"

* * *

Davin on Ice

JIMMY DAVIN, high-speed sales promotion manager for General Household Utilities, has been on the go again. First we get a card from him reading:

"Air travel either increases your life or decreases it. I left Chicago at 10 p. m. Sunday, and arrived in Seattle at 1:30 p. m. Monday—the first plane in a week to go through Portland and Seattle. The pea soup fog is *all that*. On to San Francisco, Los Angeles, and Denver. Home Dec. 5."

Breathless travelling like that is typical of Jimmy. He has Big Ideas, works fast, goes like lightning. Putting a halter on him is a helluva job. But to get on with our story . . .

From all the various spots Jimmy has been touching on his air junket, newspaper clippings have been coming in about his activities. From Seattle, for instance, comes a newspaper clipping with a headline:

GET BULLISH ON AMERICA,
URGES UTILITIES MANAGER

Says the lead of the story:

"J. J. Davin yesterday delivered a stirring message to leading Seattle merchants engaged in selling Grunow radio receiving sets and Grunow refrigerators. Davin is sales promotion manager of General Household Utilities Co., a merger of the Grunow Corp. and U. S. Radio & Television Corp.

"He spoke, quite appropriately, in the Gold Room of the New Washington hotel, and his theme was: Get Bullish on America. W. E. Darden, Pacific Coast regional manager; Kenneth Connelly of the F. B. Connelly Co.; and W. R. McCurdy, Seattle manager of the Connelly company, also spoke."

Another clipping—this one from a Portland, Ore., newspaper—has a photograph of Jimmy, WILLIAM DARDEN, Pacific Coast sales representative, GLENN H. CONNELLY, sales manager of the F. B. Connelly Co., and DONALD SLOCUM—all apparently reading a copy of ELECTRIC REFRIGERATION NEWS.

Underneath the picture was a story about a meeting conducted at the Multnomah hotel there by Jimmy, and attended by 80 Oregon dealers.

And then came a regular deluge of pictures of Jimmy on ice skates, beginning with tear sheets from the *Daily Oklahoman* and *Oklahoma City Times*, showing Jimmy in a skating race with famed BOBBY McLEAN, a race sponsored by HUGHES BOZARTH ANDERSON, Grunow distributor in Oklahoma City, and LEE HOLLAND, Anderson's sales manager.

(Jimmy has a son, you know, who has won almost as many medals and decorations as Lindbergh possesses—all for his skating ability.)

This match race was apparently followed by a typical Davin idea: tying up Grunow products with the six-day ice skating races McLean is putting on in various cities throughout the United States. Each Grunow distributor in these cities will sponsor a team, along with manufacturers of non-competitive products.

First of these races (a seven-day affair, rather than six) was scheduled for Pittsburgh. The Grunow team in this race, sponsored by the Brown-Dorrance Electric Co., is composed of AL KRUX and BOBBY LAMB. The latter is from the General Household Utilities radio cabinet department.

* * *

'Let's Talk Turkey'

L. D. James (left) and Bill Burton of James & Co., St. Louis G-E distributor, used a skit to tell their salesmen how extra work would bring them a free Thanksgiving gobbler.

Another World's Fair

Last August we were tipped off by a little group with headquarters in Chicago's Seneca hotel that A Century of Progress would be extended until Armistice Day, and that it would reopen in 1934. They were so sure of it that they offered to bet good money, at attractive odds, on both eventualities.

Not being too sure of the character of the source, and being a bit gun-shy, we didn't print the story. But it came true. And now we hear from friends in the industry that practically every refrigeration manufacturer represented in the 1933 show will be back again with an exhibit in 1934.

If you feel in the mood for figures and statistics, here are a few about the 1933 Fair to laugh off:

Some 80 per cent of the exhibitors have promised to return; 25 per cent have requested additional space. Countries, states, and corporations which hesitated to participate this year are asking for the privilege of participating in 1934.

A five million attendance will be needed to meet expenses, eight million more to retire all bonds. This year the attendance was well over 22 million.

Up to Oct. 31, the original closing date, 21,714,334 persons had paid admissions. They spent $35,000,000.

One company (Crown Foods, controlled by one of the big Chicago packing houses) operating 40 hamburger stands and six grilles took in $1,685,903. The beer gardens took in more than $3,000,000. Stands within the grounds sold $1,332,834 worth of guide books and souvenirs.

The Sky Ride took in $750,000, while $250,000 was spent by customers to be ambulated in a rickshaw or roller chair. Mr. Ripley, believe it or not, took in $538,685.03.

A combination of fan dancers, fancy diving, "art" classes, and what not brought $1,465,571 to Paris, Inc., and its concessions in the Streets of Paris. Belgian Village, exclusive of its subconcessions, took in $637,294.81.

Weight guessing scales cost visitors $167,485.63, an item representing a very high return on original investment. Greyhound Bus Corp., operating General Motors busses, entirely within the grounds, took in $1,577,041.93.

* * *

Fair Big Shots

Now that it's to be done again, how many of the men responsible for putting the Fair over do you know? Here's a little Who's Who—sparse, to be sure, but pieced together out of what information we could pick up:

MYRON E. ADAMS, onetime minister of Chicago's First Baptist Church, was first to suggest the idea of another world's fair to celebrate Chicago's hundredth birthday.

On Aug. 17, 1923, he sent a four-page letter to Mayor DEVER outlining such a plan. He wrote then:

"If now we dedicate ourselves to the realization of that wonderful conception, much may be accomplished before the actual centennial date, if our citizens will give but a small part of their effort, their wish, and their will in concert to the proposed program . . . The production of the Centennial Exhibition will require at least 10 years of hard work on the part of citizens of Chicago . . . The Lake Front offers a natural location."

Not until three years later did the City Council approve the idea. EDWARD HURLEY and CHARLES PETERSON deserve major credit for developing the idea. RUFUS DAWES and Major LENOX LOHR came later.

In all his business career Mr. Dawes is said to have fired only one employe. Unlike his brother Charley, he doesn't swear, and he smokes his pipe right-side-up.

Major Lohr is a nephew of JOHN PHILIP SOUSA. He is sharp, critical, a straight thinker, and peremptory. He is a trained engineer who has become an army man. He is quite small, and about 42 years old. Relies heavily on his longtime secretary MARTHA McGREW.

Col. ROBERT ISHAM RANDOLPH, third in line of authority, is a more human sort than his immediate superiors. Is rough but sophisticated, mathematical but imaginative—a combination of the Southern gentleman and the buccaneer, if you please.

Other high-up colonels (the Administration building is so full of "buttons" that it's like officer's quarters of an army camp) include JOHN STEWART, FRANK BRIGGS, JOHN S. SEWELL, and J. FRANKLIN BELL—all of whom have important jobs.

College profs are around, too, to assist the army men in the running of the Fair.

They include such important figures as Dr. FOREST ROY MOUTON (coformulator of the revolutionary Chamberlin-Moulton planetesimal hypothesis of the solar system), Dr. JAY PEARSONS (an associate of Dr. WILLIAM BEEBE in his oceanic explorations), Dr. FAY COOPER-COLE (one of the world's greatest anthropologists), Professor DONALD SLESINGER (University of Chicago dean and close associate of President ROBERT MAYNARD HUTCHINS), Professor HENRY CREW of Northwestern, and Dr. IRVING MUSCAT of the University of Chicago.

MILTON MAYER, brilliant young Chicago reporter, tells the following amusing tale of a tiff between Doctors Crew and Muscat:

One day in a general conference Professor Crew suggested that the walls of the Hall of Science be inscribed with tributes to the Almighty as the motivating genius behind all scientific achievement. Dr. Muscat pooh-poohed the idea.

"Young man," raged Professor Crew, "do you think you can keep God out of this exposition?"

"Not if He has 50 cents," answered Dr. Muscat.

* * *

Roy Sheldon on Styling

In the November issue of *Advertising Arts*, ROY SHELDON, who is president of Industrial Design, Inc., presents a highly provocative dissertation on styling, and uses the 1933 Norge refrigerator as an example. Read on:

"The new Norge refrigerator design is heralded as the result of the expressed desires of over 100,000 housewives. Norge asked the consumer what she wanted.

"Note: To the consumer the refrigerators of today are barbarous machines with medieval walls and little useful space. Trays freeze tight, cubes are a nuisance to extricate, defrosting a mystery. Refrigerators have had some exterior styling; design is in its infancy. The methodical approach would be first to state the design problem fully, next to attack its solution, not in terms of next season's model but of permanent consumer use (the ultimate logical solution), and third, to make up models of different designs and offer them as for sale in an actual and typical sales room.

"This means spending money for product research and competent design, both in terms of consumer wants. It means planning a business in terms of its customers as well as its machines and carrying on that plan continuously.

"It must prove economical in several ways, chiefly: eliminating the waste of tools and production investment on unwanted products, reducing tool charges through modifications and refinements in a basic design over a two-, three-, or four-year period instead of the present drastically-different-new-model-every-season. These are negative savings. They reduce present wastes.

"Positive savings represent sales cost reductions. Since the product is wanted, it more nearly sells itself. Requires less paid advertising, secures better introduction, benefits greatly by word-of-mouth recommendation.

"Since it is planned and designed to please the maximum range of desires, it finds a larger market than the product which suited four or forty executives (men) within the manufacturing organization.

"Testing is essential to the exploitation of consumer design. Test the method itself. Take 10 per cent of the line or 50 per cent of the new products and apply the consumer engineering strategy.

"Keep a record of costs and net profits and compare with the balance of the line developed under the executives' opinion (present day rugged individualism) method.

"Pick a typical package from the line; have it redesigned by the most competent designer available. Test the new package against the old and against competitors on the sales counters of a typical city. Clock sales accurately. Can you outsell your own and competitors' established packages with an unknown and unadvertised design? (It has been done.) . . .

"The one thing to remember always is that this is a consumer strategy. Open-mindedness means that fifty million women are right,—and they have the last word. The designer is not a magician, the board of directors doesn't know the answer, advertising won't put over the wrong product, dealers often sponsor flops. The consumer decides. Find her answer in advance."

* * *

Selling the Weakness

Every so often, Postal Telegraph Co. issues bulletins to its employes, suggesting ways of selling the company's service. Latest bulletin's theme is "capitalize your supposed weakness," and to make its point clear, it tells how General Electric Co. has done just that with the Monitor Top on its refrigerator.

Here are some excerpts from the bulletin:

"Did you ever hear of the advertising slogan: 'Look for the Monitor Top'? That's how General Electric refrigerators were initially merchandised. All because the G-E organization was smart enough not to defend the fact that the machinery of the G-E refrigerator is exposed and not concealed as in all other electrical refrigerators.

"When the G-E engineering department first brought out its new electrical refrigerator, there was a storm of protest from G-E salesmen. No housewife would permit an eyesore like that in her kitchen.

"You couldn't set a cooking utensil or anything else on the top. All the usual caustic criticisms from sales departments from time immemorial have levied against their engineers.

"Even if the engineers had been willing to modify the appearance, it was too late to change the design and catch the summer season. So the advertising department capitalized this alleged weakness.

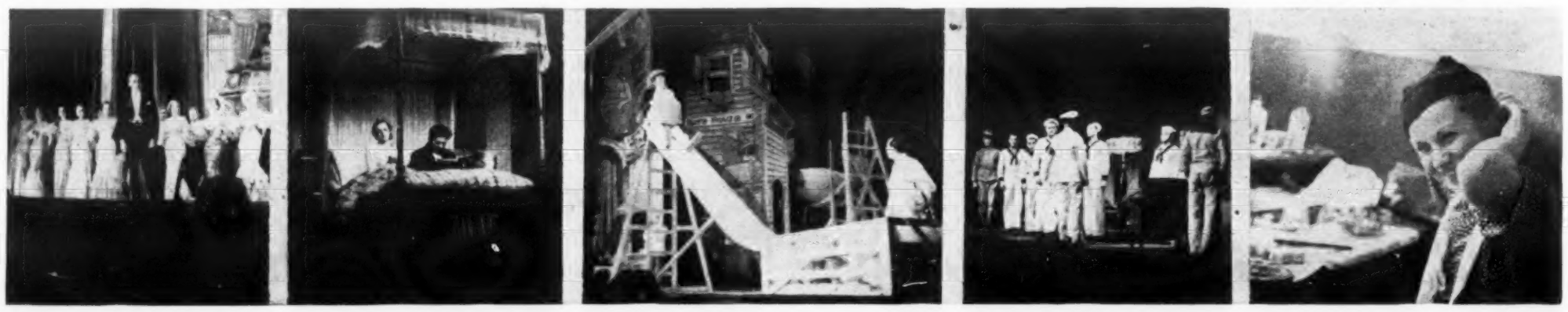
"Just because the G-E refrigerator didn't look like any other refrigerator in the world, they didn't alibi it. They sold it. They convinced the public that there was a reason why the G-E refrigerator had the works exposed—better heat radiation, compact unit easily replaceable.

"Today in Europe and Japan, tiny blocks of wood are painted white to be sold for 10 cents as toy refrigerators for the doll houses of American children.

"But in order to distinguish them from mere ice boxes, for no modern little girl wants to have anything less than a make-believe electrical refrigerator in her doll house, the wise foreigners put a little round white drum on top of the square white block so that even a little girl of six knows that it is an electrical refrigerator.

"She, too, looks for the G-E Monitor Top, the only external indicator that a refrigerator is electrical and not cooled by ice."

A.S.R.E. Members to See These Productions in New York This Week



Nightly theater parties will be in order at the A.S.R.E. convention in New York this week, according to officials of that society. Herewith are presented scenes from four Broadway successes: (1) Finale of "Hold Your Horses"; (2) Tonio Selwart reads the Bible to Peggy Conklin in one of the "bundling" scenes from "The Pursuit of Happiness"; (3) One of Joe Cook's crazy contraptions in "Hold Your Horses"; (4) The "payoff" scene from "Sailor Beware"; (5) Miss Elenore Tennis, one of the featured stars of "Champagne, Sec," dresses after the show. Messrs Howard Blood, George Mason, Bob Richards, Gil Baird, John Wyllie, Sid Egan, Paul Jones, Harvey Lindsay, and other amateur camera enthusiasts in the industry may be interested to know that the above camera-held-in-hand snapshots were taken by the editor during the plays. A Zeiss Contax camera, utilizing the ordinary stage lighting, was used.

LEAGUE ISSUES BOOK ON USE OF ITS SEAL

CLEVELAND—To encourage use of the Electrical League of Cleveland seal of approval in featuring appliances, a booklet entitled, "Our Seal: What it is, and How it is Used," has been issued by league headquarters here.

According to the authors, this seal was created for two purposes: to encourage dealers to merchandise appliances of League-approved quality, and to furnish the buyer with a guide to quality. It has become a merchandising aid, continues the booklet, through its recognition as a mark of worth.

Next, means of using the seal are suggested, such as placing it on appliances displayed in showrooms, inserting it in advertisements, and using it as a window poster.

Nine representative advertisements of Cleveland appliance dealers further illustrate use of the seal.

BLOOD ADVOCATES BOTH IRA & NRA IN INDUSTRY

NEW YORK CITY — Advocating that every company spare no effort in setting its own affairs in order while the national government works toward the recovery of all industry, Howard E. Blood, president of Detroit's Norge Corp., makes these statements in a recent issue of *Forbes Magazine*:

"Is there not an Individual Recovery Act which a single company can itself adopt, from which immediate improvement can be derived while waiting to see what will happen under NRA?

"NRA says that groups must be regimented behind a common purpose. Companies are as certainly composed of groups as are industries. Teamplay is as necessary to one as the other. What can be expected from regimenting the battalion if the individual soldiers in each company are out of step?

"Most companies in the past have considered themselves as one big, happy family, but each member has been allowed to do pretty much as he pleased. Teamwork has been a bromide that we've mouthed a lot but failed to swallow.

"High sales costs caused by individual forces working at cross purposes within a company still maintain. These cannot be longer tolerated; now, especially when costs are rising faster than selling prices. Each individual in each company must be harnessed to the common pull."

SERVICE MAN'S MISTAKE MAKES 2 SALES FROM 1

NEW YORK CITY — When Mrs. Charles Williams of Goldens Bridge, N. Y., opened the door one day last month, she found a service man from Associated Gas & Electric Co. here all ready to install a Frigidaire in her home.

She protested that she knew nothing about placing an order for the refrigerator, and the service man suggested it might be a surprise from her husband, since the order had certainly been placed by Mr. Williams.

Next day an irate Mr. Williams appeared at the utility and protested. It seems that there are two Charles Williams at Goldens Bridge, and the Frigidaire had been delivered to the wrong one.

However, the "wrong" Mrs. Williams insisted on keeping the refrigerator, Mr. Williams was agreeable, and two sales were made where one was expected.

McDOWELL TAKES CHARGE OF NORGE DISTRIBUTORSHIP

BALTIMORE—L. R. McDowell, vice president of Columbia Wholesalers, Inc., Norge distributor here, has taken charge of that organization since the recent death of its president, Leroy Andrews. Mr. McDowell has been associated with the distributorship six years.

WILEY MADE SUPERVISOR OF JACKSONVILLE WESCO

JACKSONVILLE, Fla.—W. B. Wiley has been appointed refrigerator supervisor of Westinghouse Electric Supply Co. here, and will cover the territory between Savannah, Ga. and Key West, Fla.

PROPER FOOD ARRANGEMENT SHOWN BY DEALER

GRAND ISLAND, Neb.—Featured in window displays of the Darling Furniture Co., Norge dealer here, is a Norge refrigerator with a plate of glass sealed in the front of the food compartment to show proper food storage arrangement. A large thermometer is in the center of the food display.

Quality is always in Style

Now and then one sees an ancient Rolls-Royce glide its smooth way down a boulevard. No matter what its age, it is still admitted to be near the pinnacle of mechanical perfection. Do its lines compare with those of a new model Graham, Nash or Reo? Need anyone be ashamed of it? Quality is always in style.

From the creations of the early Phoenician craftsmen to the really good of today's electric refrigerators, it is quality that is enduring. A good refrigerator will still give loyal, dependable service to its owners long after its lines and its appearance are superceded by the new styles of each year.

Is it worth while to have this value in a refrigerator and to know when it is there? Will it benefit the distributor and dealer? Make his business more stable and permanent? Today the refrigerator with honest, permanent, dependable value built into it throughout is all but indistinguishable from purely price jobs. A standard* of permanent performance recognizable to the trade and to the public will not only serve to identify honest refrigerators but will help to put the whole industry on a more permanent and dependable footing. A recognized testing association within the industry would end many of the present selling maladies and bring better days to every good element in the refrigerator industry.

We have long urged such an identification of value, since whatever stabilizes quality in the industry aids Dry-Zero. Dry-Zero's known contributions to the high class electric refrigerator are increased efficiency and economy of the refrigerator and ***a greatly prolonged life of those qualities.***

Dry-Zero Corporation, Merchandise Mart, Chicago.
Canadian Office, 687 Broadview, Toronto, Ontario.

*The "Value Mark" of an Industry

THE MOST EFFICIENT COMMERCIAL INSULANT KNOWN **DRY·ZERO**

COMPANION MERCHANDISE

Philadelphia Utility Cooperates in Merchandising Monel Metal Equipped Appliances

By R. A. Malony, Philadelphia Gas Works Co.
Chairman Refrigeration Committee, American Gas Association

GAS appliance merchandising has seldom seen a more well rounded and thoroughly worked out promotional campaign than the cooperative activity sponsored in Philadelphia recently by International Nickel Co. and Philadelphia Gas Works Co. featuring kitchen appliances equipped with Monel metal. Undertaken by International Nickel Co. at a test of possibilities of merchandising its household products through gas companies, the campaign in Philadelphia presented the unusual spectacle in the gas industry of a large national manufacturer actively engaged in cultivating the local retail field with its own advertising and sales personnel.

L. R. Larson, household division manager of the International Nickel Co., personally supervised the campaign.

With more than 200 plumber dealers, department stores, and other retailers of Philadelphia cooperating with the gas company in selling gas appliances, the situation was an ideal one, from the standpoint of the manufacturer, for conducting this experimental campaign.

From the gas company's point of view, on the other hand, the tie-in with International Nickel offered two distinct advantages. First, an opportunity to capitalize on consumer acceptance created for Monel metal products by years of consistent national advertising and, second, the increased publicity given the modernized kitchen as a complete unit.

Designed primarily to introduce to the local market the Whitehead automatic gas water heater with its Monel metal tank, the campaign was subsequently broadened to include gas ranges with Monel metal tops, Monel metal sinks and tables, and other products of the nickel company which have a place in the modern all-gas kitchen.

Because of the large and frequent space used by the gas company in the newspapers the nickel company decided that the most effective way to cooperate would be to sponsor a supplementary radio program.

This means of promotion offered the additional advantage of reaching directly a market considerably wider than the city area served by Philadelphia Gas Works Co. It was also a means of enlisting quickly the cooperation of many plumber dealers who had previously expressed a preference for radio promotion.

The activity opened on May 18 when the manufacturer introduced over station WCAU the first of a series of 15-minute semi-weekly programs featuring "Moe and Nel" in a comic "Mr. and Mrs." kitchen dialogue. Advertisements announcing each broadcast appeared in daily papers, and bulletins were sent to all gas company salesmen and dealers urging them to "listen in."

Continuity of each program was interlarded with brief comments on the Whitehead Monel metal heater, with the suggestion that it could be purchased on easy terms from plumber dealers or the gas company.

In addition, International Nickel Co. offered to send a new booklet entitled "Let's Bring the Kitchen Up-to-Date" to every listener who would write to the station.

With this booklet, which tells how to make the kitchen more attractive and efficient with Monel metal working surfaces, inquirers received an Inco Co-Plan Kitchen Service sheet. This explained how the prospect, by submitting a rough diagram of her kitchen, might obtain without cost the advice of an expert in kitchen planning and a colored sketch of her kitchen with recommended improvements.

Leads thus developed were divided among local cabinet dealers who cooperated with the utility and the nickel company.

The broadcasts and special sound films telling the story of Monel metal were also used in training gas company and plumber dealer salesmen in presentation of various campaign items.

Building up towards a period of intensive sales effort designated as "Monel Metal Week," arrangements were made to acquaint the leading builders, architects, real estate and finance representatives, and women newspaper and magazine writers of the city with the service of Monel metal in the modern kitchen.

Nearly 150 persons from housing groups were guests of the gas and nickel companies at a luncheon meeting held in the Architects building where officials of both organizations stressed the influence of all-gas Monel metal kitchens upon the sale or rental of homes.

At another luncheon and reception held for newspaper women the value of such equipment, from a woman's point of view, was discussed by home service directors of the two companies. Every local newspaper, radio station, and several of the largest women's periodicals of the country were represented at the meeting.

One of the most significant features of the entire activity was the keen interest displayed by such large department stores as Gimbel Brothers and Strawbridge & Clothiers, both of which installed model all-gas Monel equipped kitchens in their home-furnishings departments and featured them in their newspaper advertising.

In addition to the extensive local newspaper and radio advertising conducted by both the gas company and the International Nickel Co., interest was created by the sample kitchen displayed in the gas company's showroom and windows throughout the campaign.

Signs telling the exact cost of the cabinets, ranges, refrigerators, and other units in the display were placed in several of the windows. Other displays featuring the Whitehead Monel metal water heater and a dramatization of Monel metal's use in industry were scheduled simultaneously.

All gas company and many dealer's trucks carried a colorful poster advertising the all-gas Monel metal kitchen, and companion window cards of like design were displayed in practically every appliance showroom.

Timken Literature Used In Babson School

DETROIT—Sales training material of the Timken Silent Automatic Co. here is to be used as text material in the sales and advertising classes of Babson Institute, Roger W. Babson's school for business executives.

ALLIED STORE APPOINTS N. Y. DISTRIBUTOR

ST. LOUIS—William F. Gorman and Michael Goldstein have been appointed metropolitan New York distributors for products of the Allied Store Utilities Co. (manufacturer of Hussmann-Ligonier). Offices and salesroom of the distributorship will be at 480 Lexington Ave.

GEORGIA POWER CO. SELLS 1,146 RANGES

ATLANTA—Sale of 1,146 electric ranges in six weeks was the record made by Georgia Power Co. in its fall range sales campaign which closed Nov. 11. Selling forces in all of the utility's six divisions made more than 100 per cent of quota during the activity.

Following are the divisions and their standings at the end of the campaign: Athens, 147.7 per cent; Rome, 127.4 per cent; Columbus, 123.2 per cent; Macon, 114.7 per cent; Augusta, 100.8 per cent; and Atlanta, 100.6 per cent.

N. Y. DEPARTMENT STORE HOLDS COOKING SCHOOL

NEW YORK CITY—Gimbel Bros. department store here recently opened its model kitchen with a four-day cold cooking school under the direction of Gertrude Janssen of the Kelvin Kitchen staff in Detroit, and Laura Barron, home economist with E. A. Wildermuth, Brooklyn Kelvinator distributor.

Each day a different type of entertaining was discussed and a menu prepared. A Thanksgiving dinner menu, including preparation of a turkey, was featured at the final session.

Hibben Westinghouse Lighting Director

EAST PITTSBURGH, Pa.—Samuel G. Hibben, manager of the commercial engineering department of the Westinghouse Lamp Co. for the past 15 years, has been appointed director of lighting, according to A. E. Allen, vice president, in accordance with an expanding program of illumination activity.

In the new position he will function as an ambassador-at-large on all lighting activities, keeping in touch with new lighting developments as they take shape in the research laboratories, following them through to their application in the field.

LANDERS, FRARY & CLARK ADDS TWO PRODUCTS

NEW BRITAIN, Conn.—Landers, Frary & Clark, manufacturer of electrical appliances, has added a full-automatic waffle iron and a "turn easy" toaster to its line of small appliances.

A-B STOVE JOINS RANGE COUNCIL ACTIVITIES

NEW YORK CITY—The A-B Stove Co. of Battle Creek, Mich., manufacturer of the A-B electric range, is now participating in the activity of the National Electric Cookery Council.

NOW IS THE TIME FOR THAT PRIZE-WINNING CHRISTMAS REFRIGERATION WINDOW

Right now is the psychological moment—just the right time to put in your window the cleverest, most sales appealing display of electric refrigerators you know how to make.

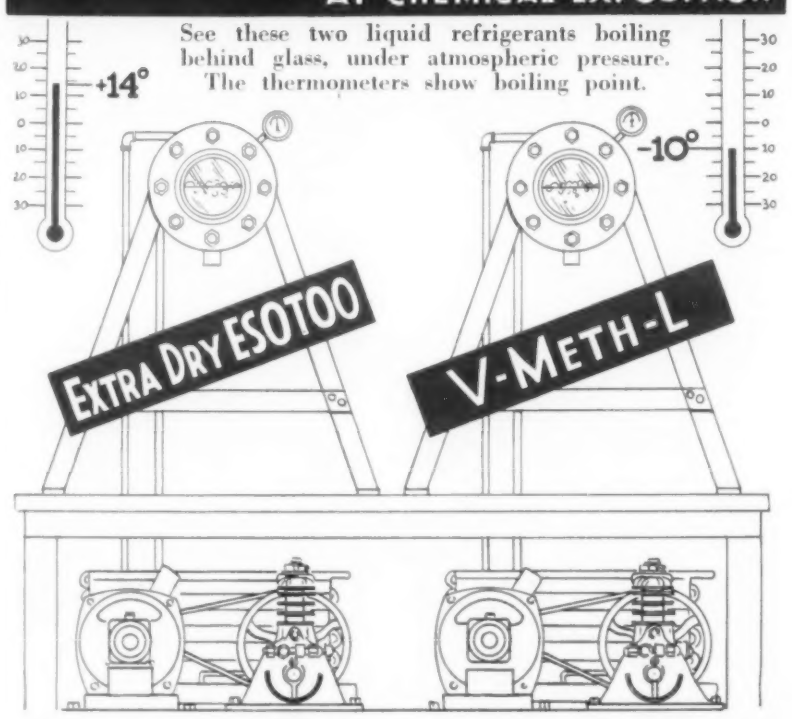
There's money in reminding people between now and Christmas that the perfect answer to "what shall I give for Christmas" is an electric refrigerator.

Besides that profit there are hundreds of dollars in cash prizes offered in the Electric Refrigeration Bureau Christmas Window Contest. Why not get yourself a one-hundred dollar prize? There's a big illustrated folder which tells all about this contest. If you haven't a copy—*send for one this minute.* Don't miss this chance.

INVEST IN AN ELECTRIC REFRIGERATOR

ELECTRIC REFRIGERATION BUREAU
Sponsored by Edison Electric Institute
420 Lexington Ave., New York City

SEE THE EXHIBIT OF
VIRGINIA SMELTING CO.
AT CHEMICAL EXPOSITION


See these two liquid refrigerants boiling behind glass, under atmospheric pressure. The thermometers show boiling point.
+14°
-10°
EXTRA DRY ESOTOO
V-METH-L

Extra Dry **ESOTOO** (Liquid Sulphur Dioxide) is world-known as a reliable refrigerant for small refrigeration machines. Its purity and entire absence of moisture and acid are important factors in contributing to its universal popularity. Instantly available from representatives in 36 convenient points.

V-Meth-L (Virginia Methyl Chloride) fills the demand for a refrigerant, in physical properties, between liquid sulphur dioxide and liquefied ammonia gas. This product is refined with the same exacting care that has always governed the production of Extra Dry **ESOTOO**. Now in stock in many cities.

VIRGINIA SMELTING COMPANY
WEST NORFOLK, VIRGINIA
F. A. Eustis, Sec., 131 State Street, Boston, and 76 Beaver Street, New York.

COMMERCIAL INSTALLATIONS

Indirect Cooling Used in G-E Theatre

(*See Picture on Page 11*)

CHICAGO—Application of the indirect method of cooling in air conditioning, using refrigerated water as the circulating medium, was demonstrated here last summer in General Electric's air-conditioned "House of Magic" theater at A Century of Progress.

The installation included 10 2½-ton G-E commercial condensing units which serve a like number of Filtrine tank-type water coolers. From the coolers water was circulated through coils which cooled the air.

Two water coolers were connected in parallel to one circulating pump, the five pumps circulating the refrigerated water through air-cooling coils which, together with a 6,000-c.f.m. blower, are enclosed in a sheet metal housing.

Supply, fresh air, and return ducts were also connected to the housing in which heating coils filters, eliminators, etc. were also located. A G-E oil furnace supplies heat in cold weather. The entire equipment is automatically controlled by G-E thermal controls installed in the auditorium.

Half-hour shows were given daily during the fair from noon until 10 o'clock at night with the 250 seats occupied practically all the time. In laying out the installation, engineers of G-E's air-conditioning department expected to hold 80° F. and 45 per cent relative humidity in the auditorium when outside temperatures rose to 95° F. The computed cooling load under these conditions was 240,000 B.t.u. per hour or 20 tons.

Although the estimated cooling load required only eight compressor and water cooling units, two extra ones were installed to have reserve capacity for unusually hot weather.

Two tests were run on the system during the past summer.

First test was with an outdoor temperature of 95° F., an indoor temperature of 80° F., and an indoor relative humidity of 45 per cent. This was with eight of the ten units in operation, providing a cooling capacity of 276,200 B.t.u. per hour or about 23 tons. Temperature of the refrigerated water averaged 45° F., with a circulation of 175 gals. per minute.

Second test was run on a hotter day with all 10 cooling units in operation. Then the outdoor temperature was 102° F., the indoor temperature 83° F., and the indoor relative humidity 45 per cent. Cooling capacity was 358 200 B.t.u. per hour (nearly 30 tons). Under these conditions 220 gals. of refrigerated water per minute were circulated, with a water temperature of 45° F.

McCORD
REFRIGERATION
PRODUCTS

Commercial Evaporators
Domestic Evaporators
Condensers
McCord Ice Trays
Spiral Finned Tubing
Spiral Copper Finned Iron,
Steel or Copper Pipe

McCORD
RADIATOR &
MFG. CO.
DETROIT - - MICH.

FRIGIDAIRE REPORTS 4 N. Y. INSTALLATIONS

NEW YORK CITY—For food preservation and beer-cooling purposes, four sizable installations of Frigidaire equipment have been made recently by Frigidaire Sales Corp. here, according to C. M. Eakin, manager of the branch.

One installation is in the Berkeley Cafeteria at 206 West 57th St. An FW-6200 compressor was installed to cool three cabinets, one a three-compartment food box measuring 18x7½x8 ft. high, insulated with 4 in. of corkboard, and having three FDX-1854 coils.

Other cabinet is of the bench type, is 7 ft. x 27 in. x 31 in. high, and is cooled by an FDX-5468 coil. The unit also cools a No. 5 Filtrine tank, says Mr. Eakin.

Four boxes are cooled by an FW-375 compressor installed in the Berkeley establishment. One is a counter box 7x2½x3 ft. in size, equipped with an FDX-4568 coil. Another is a kitchen box measuring 54 in. x 32 in. x 7½ ft., and having an FDX-1842 coil.

Third is a bottle cooler having dimensions of 4½ ft. x 2½ in. x 21 in. high, with an FDX-4542 coil, and the fourth is a milk box measuring 3x2x2½ ft. high, equipped with 80 ft. of ½-in. tubing.

Marlboro Restaurant

Five compressors were installed in the Marlboro Cafeteria at 1359 Broadway. One of them, model FW-6300, is connected with a five-compartment general food storage refrigerator which is 40x8x8 ft. in size, and is insulated with 4 in. of corkboard. In it are three FWX-2166 coils, an FWX-2178 coil, and another FWX-2188 coil.

This compressor also cools a beer storage cabinet measuring 7x7x8 ft., insulated with 4 in. of corkboard and equipped with an FWX-2166 coil.

An FW-375 compressor is installed to refrigerate two 6-ft. counter refrigerators, a 5½-ft. counter box, and another 8 ft. in length. In the first are two FDX-1056 coils, in the second is an FDX-1056 coil, and in the third an FDX-1080 coil.

Another compressor, model W-375, is being used to cool two TT-12-CC beer tanks in the cafeteria's bar. An FWS-233-S compressor was installed to refrigerate two four-hole ice cream cabinets, and an FW-6300 compressor was purchased for use with a model 300 water cooler.

Normandy Bar and Grill

The Frigidaire branch has made a third recent commercial installation in the Normandy Bar and Grill at 120 Third Ave.

One W-4100-S compressor was installed to cool the following: a short order box measuring 4x2x6 ft. high, insulated with 2 in. of corkboard and having a DX-15 coil; a 3x2x3-ft. milk box having 1½-in. corkboard insulation, and cooled by 100 ft. of ½-in. tubing; a salad pan measuring 8 ft. x 18 in. x 1 in., cooled by 60 ft. of ½-in. tubing.

Installed to cool three compartments of a storage refrigerator was a W-5150 compressor. It refrigerates an M-25-R Filtrine tank, also. Size of the storage box is 14x11x7 ft. In its vegetable compartment is a WX-1478 coil; there is a DX-1866 coil in the dairy compartment, and a WX-1478 coil in the meat section.

A W-5150 compressor, with a 24-gal. surge tank, cools the beer compartment of the storage refrigerator. In this compartment are a DX-1266 coil and a WX-1498 coil, and in the bar's two dispensers are two TT-12-CC coils served by this same unit.

Fourth recent commercial installation is in the Terminal hotel at 565 W. 23rd St. Two compressors were installed there, one a model W-5150 unit connected with a 15x10x6½-ft. beer box which is insulated with 2½ in. of sawdust and 2 in. of corkboard. In the cabinet are two DX-1866 coils, and four TT-12-CC tanks are used for the dispensers in the bar.

Other compressor is a model W-5100, which cools the hotel's general storage refrigerator. The cabinet is 13x7½x8 ft. in size, and is insulated with 2½ in. of sawdust and 2 in. of corkboard. In it are two DX-1866 coils.

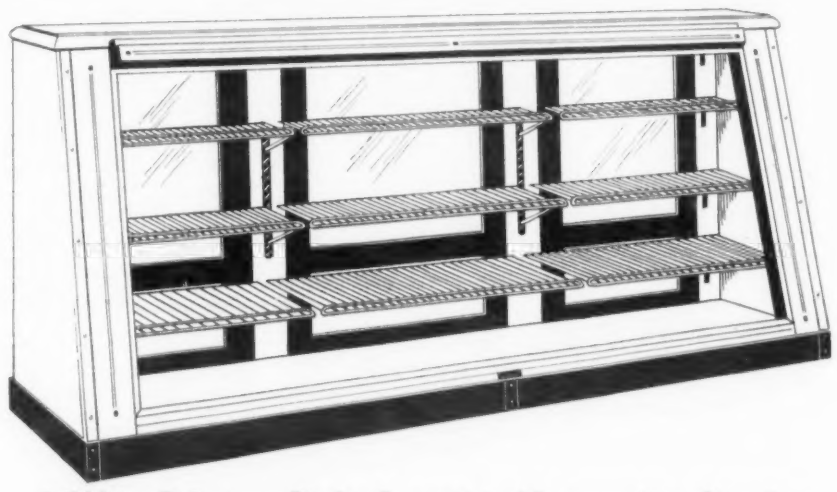
KELVINATOR COOLS WATER IN CHRYSLER OFFICES

DETROIT—The new administration building of the Chrysler Corp., recently constructed here, has been equipped with six bubbler-type drinking fountains, supplied by a water circulating system cooled by Kelvinator refrigeration equipment.

Three Kelvinator water-cooling systems, cooled by one ½-hp. condensing unit, are used to cool the water.

Seeger

Delicatessen Display Cases
With Refrigeration Coils

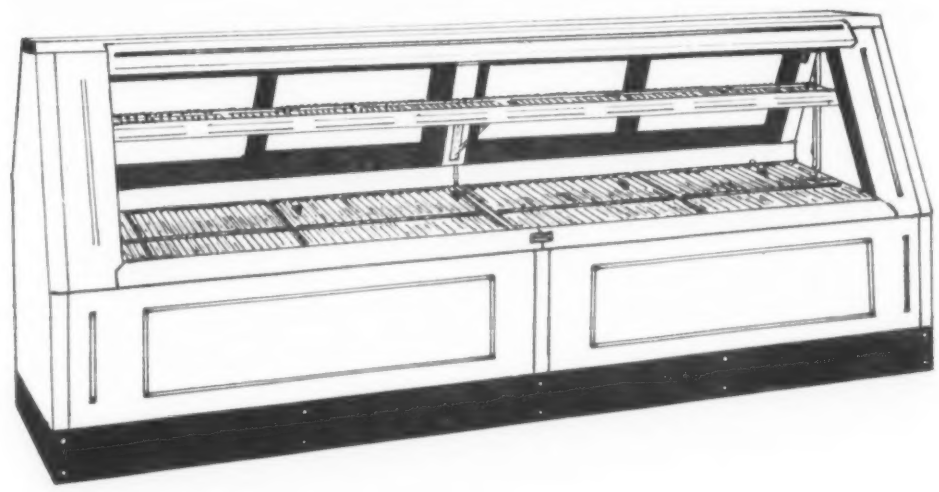


Full Vision Delicatessen Display Case equipped for convenient refrigeration display and quick sales

Dealers and Distributors of Electric Refrigeration can now offer to their customers Seeger's latest advance in Electric Refrigeration—Full Vision and Single Duty Delicatessen Display Cases equipped with diffusion shelf evaporator type coils. These coils produce a low, uniform temperature, are self defrosting, with correct humidity, preventing losses from shrinkage and trimming.

The combination of case and coils can be offered with complete confidence that the coils are correct and will do the best job, while the cases are up to the usual Seeger standard. The coils are connected ready for thermostatic expansion valve and compressor attachment, which are furnished by Electric Refrigeration Distributor.

Exterior of "Seeger Made" white porcelain, with green design and black porcelain base. The interior is of "Seeger Made" white porcelain. Display section has three thicknesses of ¼ in. plate glass, rubber sealed and Seeger processed to prevent fogging (patent pending) a proven development exclusive with "Seeger Made" cases. The entire case is adequately insulated.



Single Duty Delicatessen Display Case thoroughly modern and convenient for the preservation and sale of food

Seeger Delicatessen Display Cases are sold through Dealers and Distributors of Electric Refrigeration.

For detailed information on Seeger Delicatessen Display Cases, Butcher Display Cases, and any other type of Commercial Refrigeration Cabinets, write

Seeger Refrigerator Company
SAINT PAUL, MINNESOTA
NEW YORK BUFFALO LOS ANGELES PHILADELPHIA CHICAGO BOSTON

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EDITORIAL AIMS

To encourage the development of the art.
To promote ethical practices in the business.
To foster friendly relations throughout the industry.
To provide a clearing house for new methods and ideas.
To broadcast the technical, commercial, and personal news of the field.

VOL. 10, NO. 14, SERIAL NO. 246, DECEMBER 6, 1933

A Million Units

UNEXPECTED was the record established by the electric refrigeration industry during the first 10 months of 1933 by selling more than a million household electric refrigerators. In no previous year had the million mark been reached, although for 1932 the Electric Refrigeration Bureau set up an unattained goal of 1,000,000 units. This year the quota decided upon by the bureau was 840,000 (the industry's total in 1929 and again in 1932)—which means that the industry has attained some 137 per cent of this nation-wide quota.

That, most will agree, isn't a bad job for 10 months. But what makes these facts and figures even more exciting is the observation that sales got off to an exceptionally late start. The coveted million mark was, as a matter of fact, reached in approximately *eight* months of 1933.

Off to a Bad Start

Never have distributors been so blue or manufacturers so apparently hopeless as they were in January and February of this year. Business was rotten. It not only wasn't getting any better, but it seemed to be headed down a toboggan slide. And then, climax of all lugubrious climaxes, all the banks in the country closed. To ambitious sales managers, the world had come to an end. But it was recreated, and business was reborn!

Slowly, as banks began to reopen in scattered sectors, reports began to trickle in to ELECTRIC REFRIGERATION NEWS that people were buying refrigerators here and there. Skeptical, members of the staff, headed by Publisher F. M. Cockrell, began private tours of investigation around the country to visit dealers and see for themselves if electric refrigerators were being sold—and if so, how many, how, and to whom.

Big Upswing After Bank Holiday

Results of these junkets were amazing. Dealer after dealer reported the best sales of his entire career as an electric refrigerator dealer. What's more, cash-on-the-counter was being paid for refrigerators (it wasn't long before worried finance companies began offering prizes and premiums to dealers and salesmen in order to stimulate time payment sales).

And then came the reaction from the now-harried manufacturers, who were taken completely by surprise. Some of them had started off the year with large field stocks. A few manufacturers, to meet this condition, had to postpone the introduction of their 1934 lines until a month and even two months after the projected date for their debuts. Added to (or rather, subtracted from!) the evidence of large inventories, was the low state of the various order departments, most of which had taken to bridge and crossword puzzles in order to occupy the time between orders. No warning of the impending deluge was in sight.

Some of the biggest factories in the industry were completely shut down. Others were running only part time. And then it came. When it rained, it poured—orders. Quickly running through the piled up field stocks, cleaning out the nation's warehouses before manufacturers' field men could come out of the state of coma into which lack of business had drugged them, dealers began demanding more refrigerators. Workmen were hastily called back, production lines whipped into shape again, and the wheels started turning.

Here again came a difficulty caused by the fact that nobody had foreseen and been able to predict the sudden rush of business. No parts or materials were to be had. Factories would receive a shipment of parts, work madly for a few hours, and then shut down again pending the arrival of another trainload or carload of supplies. Production managers went through the worst hell (to some, however, it was the most gloriously exciting period of their lives) of their entire experience as factory managers.

Total Might Have Been Higher

Almost any distributor or dealer one talks to will tell you he could have sold lots more refrigerators than he did during the late spring and early summer of 1933—if he had had them to sell. People were in a buying mood, and not being able to get an electric refrigerator, bought something else with the currency they removed from underneath the mattress.

In other words, if by some miracle executives had been granted clairvoyant sight—and if, by another miracle, they would have been able to believe what they saw in the magic crystal ball—and had been prepared for the biggest buying rush in the history of electric refrigeration, the sales total for the year might have been higher than even the present eminently satisfactory figure.

Demand held up through June and July, and even ordinarily dull months like August, September, and October produced new records.

Metropolitan New York Leads Again

New York again led the roster of states in sales, having absorbed almost twice as many refrigerators as its nearest rival, Pennsylvania. New York, Pennsylvania, and New Jersey—containing the practically contiguous New York City-Newark-Philadelphia metropolitan territory—between them accounted for one-third of the nation's total sales.

Illinois, Ohio, and Michigan, which not only harbor mighty metropolitan centers, but which also manufacture the great bulk of the total output of electric refrigerators, ranked third, fourth, and tenth, respectively, among the states when lined up in order of the number of electric refrigerators sold within their confines. California and Texas distributors did remarkably good jobs in 1933, while Massachusetts and Missouri came through as expected.

Fewer Fingers in the Pie

One particularly notable feature of the 1933 season was that there were fewer and larger cuts in the electric refrigeration pie than ever before. It hasn't been long since we were referring to an industry of more than 200 manufacturers. This year only 40 were taken into the final reckoning. And of these 40, five or possibly even 10 may not be present in the line-up when the whistle is blown to open the 1934 season.

It is estimated that 24 of the 40 concerns each sold less than 5,000 units during 1933, while six sold less than 1,000. All of which indicates that the leaders took relatively larger portions of the total than they have in past years—and of a total which was the biggest in the history of the industry!

All things considered, the various elements of the electric refrigeration industry—production, promotion, distribution, management—have ample cause to be congratulated. But best of all, every indication seems to point toward the possibility that 1934 will be the biggest year yet for refrigeration products.

LETTERS

How to Train Commercial Salesmen

Commercial Refrigerator Mfg. Co., Ltd.
1020 East 59th St., Los Angeles, Calif.
Nov. 20, 1933.

Editor:

I noted with interest your article in the last issue of the NEWS on "A Way to Help Your Commercial Salesmen" and when you say that his work is more complicated than that of the domestic refrigeration salesmen you hit the nail on the head.

Due to improvements in commercial refrigeration applications it is becoming more complicated every year. Besides being a salesman he must be a store layout expert, a refrigeration engineer, and be willing to work 18 hours a day.

The bulk of our sales are to the retail perishable food dealer and every salesman in this line should know more about retailing of perishable foods than does the retailer himself. The depression has really changed the storekeeper into a food merchant. In predepression days business was generally good, with adequate profits so that leaks in the business could pass unnoticed inasmuch as the retailer was making good money and was satisfied.

However, the depression intensified competition and price cutting to such an extent that over 75 per cent of all retail food merchants were not only operating in the red but were losing their entire assets besides. The writer has found that the average merchant in times of prosperity is smug and contented and has great faith in his merchandising ability. But, in periods of economic crisis he finds the methods used in good times are inadequate and has that helpless feeling that the shipwrecked mariner feels on finding himself on a raft in mid-ocean without oars or sail.

Working on the theory that a drowning man will always grab for a straw we worked up a sales demonstration built around the depression and proved to the retailer how his very existence depended on the elimination of all leaks in his business. We compared his business to a row boat in mid-ocean and then showed him ways and means of plugging these leaks, rigging up sails and charting a course of prosperity even in these uncertain times.

The sales demonstration was built around seven basic headings, and each heading was broken down into from 12 to 18 subheadings. Each main heading dealt with leaks in the business. These are:

(1) Labor savings possible with modern equipment. Every move of the retailer from 7:00 a. m. to 6:30 p. m. was studied and equipment was designed to eliminate all excess lost motion.

(2) Increased sales per customer and additions of new customers. A study of consumer reactions, appetite, illumination, arrangement of display, building up the average sale and consumer habits was made.

(3) Teaching the merchant to buy to better advantage and storing his purchases without loss in color, flavor, or quality.

(4) Reduction of shrinkage losses 85 per cent or more. Many merchants did not realize the large amounts they were losing annually through shrinkage. Each salesman was equipped with necessary apparatus to prove to the merchant the extent of his shrinkage alone was more than the cost of the equipment.

(5) Reducing refrigeration costs from 30 to 40 per cent. The majority of food merchants have obsolete equipment and in many instances the cost of operation, maintenance, and repair was as much as the monthly payments on new equipment. Each salesman was thoroughly schooled in all old makes of equipment with testing apparatus to determine efficiency losses and power costs.

(6) How trimming losses were reduced from 75 to 85 per cent. A general survey of trimming losses was made. In markets with obsolete equipment this loss would often run as high as $75 per month depending, of course, on the extent of his operations.

(7) How the control of decay bacterial growth practically eliminated losses due to spoilage. Each salesman was grounded in elementary science so that he could illustrate to the merchant the inception, growth, and multiplication of the decay bacteria and prove conclusively to him how the control of bacterial growth saved him hundreds of dollars annually.

Obviously, the performance of the equipment, when installed in the merchants place of business must back up this demonstration. If it does not, a repossession is a certainty. Installing poorly engineered equipment is not the answer as evidenced by the fact that repossessions on commercial refrigeration were so large during the past three years that very few national finance companies will handle commercial refrigeration paper at all and those who do demand from 30 to 40 per cent reserves.

Due to insistence of finance companies the average refrigeration dealer has not been able to sell any appreciable quantity of commercial refrigeration equipment as the reserve, was in many instances, his entire profit in the transaction.

Inasmuch as we carry our own paper we were in a position to go after this business. Instead of holding out for 25 per cent or more as a down payment we accepted as low as 10 per cent and during the year of 1932/33 the repossessions were 52 per cent less than in 1929 and 1930. The principal reason for this is that we were unwilling to install equipment in a merchant's place of business unless he used the equipment to the best possible advantage. Then, we educated the merchant on the seven points mentioned in this letter and it is surprising how many of them soon were operating at a profit who had been operating in the red.

The commercial refrigeration manufacturers, in many instances, have been passing up a golden opportunity to assist the retail merchant in becoming more efficient with the result that they too, lost money. There is more business than ever to be had as the saturation point is never reached with commercial refrigeration. Every 8 to 10 years the merchant should be sold new and modern equipment; therefore the potential is always there.

We have learned that if we are to forge ahead and profit we must do more than sell equipment to the merchant and let him worry how he is to pay for it. The merchant must be educated on the need of new equipment and then taught how he can use a portion of the savings to pay for the equipment retaining the balance to build up his stocks, improve his building or otherwise build up his general assets.

From a survey in 42 states in which this company operates the writer is convinced that 1934 will be the beginning of a considerable boom in the sale of commercial refrigeration equipment. Manufacturers who have foresight, keep up on research and are willing to gamble with their cash in sales promotion should reap a rich harvest next year.

G. R. LINDAHL,
Vice president in charge of sales.

True Story

Auditorium Conditioning Corp.
17 East 42nd St., New York City
Nov. 24, 1933.

Editor:

I was much interested to read your editorial in the Nov. 22 issue of the ELECTRIC REFRIGERATION NEWS.

I think it is a most interesting and true story. The only part I am not sure is true is whether a vaudeville house is empty when Aimee McPherson speaks. I have never been in a vaudeville house when she spoke, and hope I never will. Therefore, I don't know if they are empty or not at that time.

Seriously, however, I think your editorial will be interesting reading for a great many people in the industry. It points out a great many things that are being thought of today by the thoughtful men in the industry. Would it be possible to get reprints of this editorial that we could send out to people that we think would be interested?

J. O. ROSS,
President.

Effective

Liberty Refrigeration Corp.
237 Georgia Ave., Providence, R. I.
Nov. 20, 1933.

Editor:

Permit me to comment on the apparent effectiveness and wide dissemination of your publication, as we have received literally dozens of requests for information, prices, etc. as a result of the article on our beer cooler, and have made sales not only in this country, but in Cuba and Mexico as well. It has really opened our eyes to the effectiveness of your publication.

J. H. READIO, JR.,
General manager.

Prompt Notice

Peter Wendel & Sons, Inc.
155-171 Badger Ave., Newark, N. J.
Nov. 21, 1933.

Editor:

We sincerely want to thank you for your postal in reference to commission salesmen, and also want to compliment you on your prompt notice.

PETER WENDEL,
President.

Kind Words Dept.

"Kindly send us two copies of ELECTRIC REFRIGERATION NEWS of Nov. 22 issue. We find things, other than news, in your publications. To us, it's kind of like, when a feller needs a friend."—Smith K. Gerhardt, vice president, Zerwecks, E. St. Louis, Ill.

"We find your paper very interesting and we look forward to receiving it every week."—Hector M. Milne, Montreal, Quebec, Can.

INSTALLATIONS

9 Westinghouse Hermetic Compressors Used to Cool Seed Incubators

AMES, Iowa—Nine ½-hp. Westinghouse hermetic condensing units have been installed by the Westinghouse Electric & Mfg. Co. at the Iowa State College here for making temperature tests in connection with experimental work in the germination of seeds and plants.

This installation makes it possible for experiments to be made with temperatures varying from minus 20° F. to plus 40° F. all the year round. This installation was designed for the Botany Department and consists of four rooms.

Room one is 11 ft. wide, 15 ft. long, and 8½ ft. high, and is equipped with diffuser type evaporators to maintain a temperature of 40° F. In this room is a series of small refrigerator cabinets. These cabinets are incubators equipped with Westinghouse space heaters to provide varying temperatures. In these cabinets seeds and bulbs are germinated at varying temperatures.

40° F. Room Temperature

As stated, the room temperature is maintained at 40° F. so that temperatures in the incubators can be regulated as desired to any temperature above 40° F. The control on this room maintains a constant temperature of 40° F., plus or minus one degree. The room is insulated with 6 in. of cork all around and like all four rooms, it has plastic finished walls painted with oxide aluminum. Two inches of concrete was laid over the cork floors.

The second room is 8 ft. wide, 11 ft. long, and 8½ ft. high and is equipped with cross fin type coils for the purpose of maintaining a temperature of 22° F. above zero. This room is insulated with 8 in. of cork.

The door into rooms three and four opens from this second room. The third and fourth rooms are smaller in size, insulated with 12 in. of corkboard and temperatures of minus 6° to minus 22° F. are maintained, plus or minus one-half of 1 degree.

Spring-Mounted Controls

The controls are mounted on springs to prevent jarring when the doors of the room are opened and closed. A baffle was provided to prevent the draft or cold blast of air when the doors are opened from affecting the operation of the controls.

These small rooms are for the purpose of testing the effect of winter kill on seeds and bulbs germinated in rooms one and two. The doors for rooms three and four have a 12-in. overlap all around the door openings, and the interior of the door is metal and the 12-in. overlap faced with felt to insure a perfect seal. These doors are 12 in. thick.

There is only one common entrance into this series of rooms. First, into the 40° room, then into the 22° room, then into each of the lower temperature rooms.

The purpose of this is to prevent the highly humid air from surrounding atmospheres from reaching the low temperature coils. This eliminates moisture from the cold rooms to the point where no trouble is experienced with the coils icing over at any great degree.

In the accompanying picture is the bank of nine hermetically sealed ½-hp. Westinghouse condensing units which were used to maintain the temperatures in these four rooms. Engineers of the state university favored the hermetically sealed unit for this installation, their theory being that to pull the required vacuum to produce the low temperature with the conventional type of compressor would impose an unusual strain on the seal.

Maintain Specified Variations

In securing the contract for this installation, it was necessary for the Westinghouse company to give a guarantee to produce specified temperatures and maintain the specified variations in these various rooms.

In the final test for the approval of the university, the installers brought the temperature of room one down to 20° F., while in room two, the temperature was lowered to between 14 and 15° F. In room three, 16° below zero reached and in room four, 36° below zero was pulled and maintained at a variation of plus or minus ½° of the room setting. The guarantee calls for producing temperatures of 40° to 22° F. above zero and 6° to 20° below for rooms one, two, three, and four respectively. The specified condensing room temperature was 70° F. When the tests were run, the actual condensing room temperature was 85° F.

Purpose of Installation

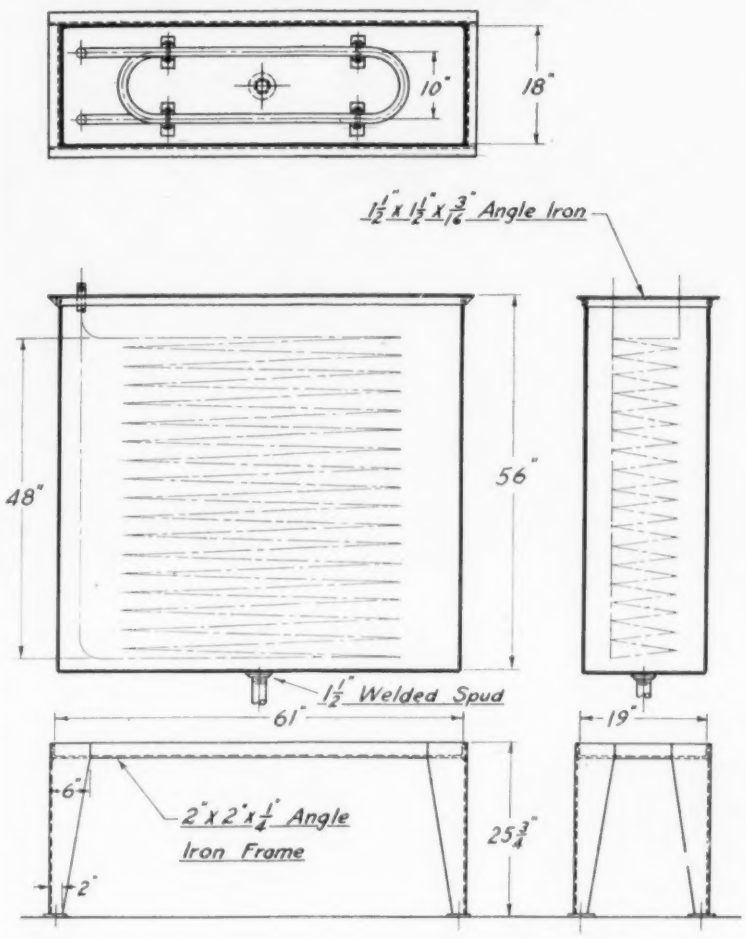
The purpose of the entire installation was first to germinate the seeds and bulbs in the incubators and in room one, then remove them to the cold room and subject them to varying temperatures representative of extreme winter freezing temperatures for a definite period of time, and then bring them back to the warmer rooms again and ascertain if it would be possible for them to continue their germination process again.

The entire laboratory was built for the purpose of furthering the experimental work in the process of developing seeds and bulbs which would stand the extreme winter weather encountered in the extreme northern part of the country with the idea in mind of assisting farmers to eliminate the number of failures of fall wheat and other crops which are planted in the fall and must withstand low temperatures before the germination process again begins in the spring.

A Battery of Nine

Nine Westinghouse machines produce severe winter conditions at Iowa State College for germination tests on seeds and plants.

Open Type Brine Cooler



Construction of an open type brine cooler (described at right) built to cool brine for the aerator of a New Jersey dairy.

OPEN BRINE COOLER INSTALLED IN DAIRY

NEWARK—W. J. Russell, engineer with the Frigidaire Sales Corp. of this city, reports the recent installation of a Filtrine open-top brine cooler as illustrated above in connection with refrigeration equipment in the dairy owned and operated by P. A. Fiory, Pompton Plains, N. J.

The tank is uninsulated and helps furnish refrigeration along with two Frigidaire "Diamon-Fin" coils to maintain a refrigerator temperature below 45° F. in a concrete and cork cooler 10x6x8 ft. high.

The brine cooled in this tank is used for circulation through an aerator cooling 125 gals. of milk per day from 140° F. where it leaves the pasteurizer to below 45° F. at which temperature it is bottled.

The above equipment is operated by a model FW-6150, 1½-hp. Frigidaire compressor designed for use with Freon.

The oblong steel tank, hot galvanized after fabrication, is mounted on a steel table stand and contains a steel pipe evaporator coil consisting of 130 lineal ft. of extra heavy pipe, specially processed in accordance with Frigidaire's specifications for cleaning and dehydrating of steel pipe coils.

Restaurant Buys Three G-E Cooling Units

ST. PAUL—Installation of three "conditioned air" cooling units and two CM-6W compressors was made in Kregel's Restaurant and Drug Store here recently by O. F. Steufer, Inc., General Electric distributor in Minneapolis-St. Paul. The equipment is being used for beverage cooling and food preservation. Dewey Edson made the sale.

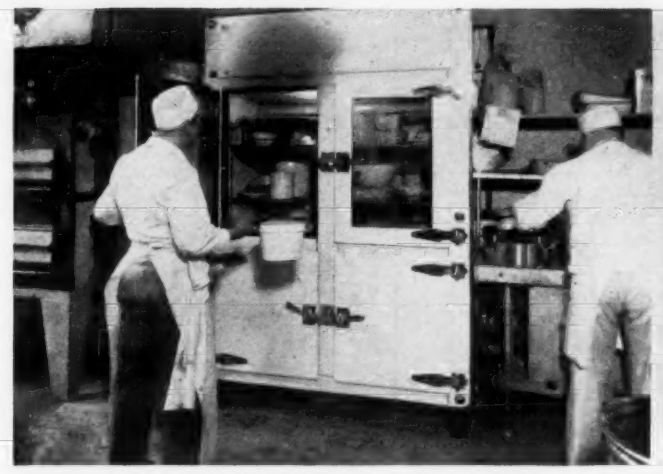
It is easy to advance claims for a product's capacity to deliver outstanding performance. But Universal Cooler prefers to rest its case on the service which its units have given to users of commercial and household electrical refrigeration throughout the last ten years.

UNIVERSAL COOLER CORPORATION
DETROIT, MICHIGAN BRANTFORD, ONTARIO

MANUFACTURERS OF A COMPLETE LINE OF HOUSEHOLD AND COMMERCIAL REFRIGERATION EQUIPMENT

Refrigeration Useful in Varied Fields of Commerce

Restaurants

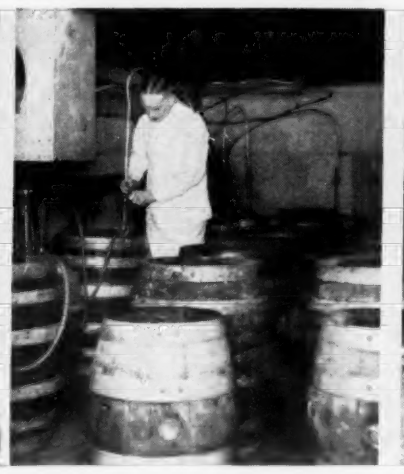


One of the most extensive fields for commercial refrigeration is in restaurants. Here is a large Seeger case in the kitchen of the Purple Inn, Evanston, Ill.

Water Cooling

Westinghouse water cooler serves refreshing drinks to customers of a Wilkinsburg (Pa.) gas station.

Barrel Storage



Kegs in O'Connor's Cafe, Philadelphia, are cooled by a Kelvinator forced convection unit.

Beer Service

Both bottled and draft beer are available at the Van Cleve hotel, Dayton, which has a Frigidaire draft beer cooler (left) and a large reach-in box (center).

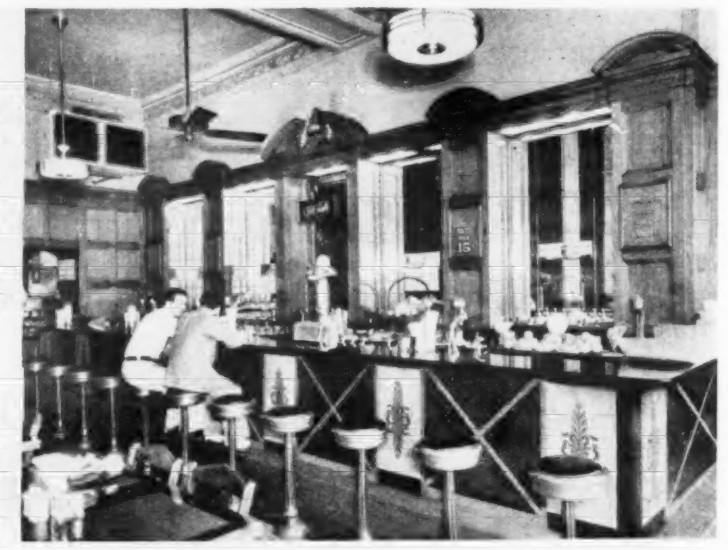
Refrigerated Window

Window display at the United Market, Chicago, refrigerated by an L-type Dole vacuum plate coil, cooled by brine from a York ammonia system.

Flower Shop

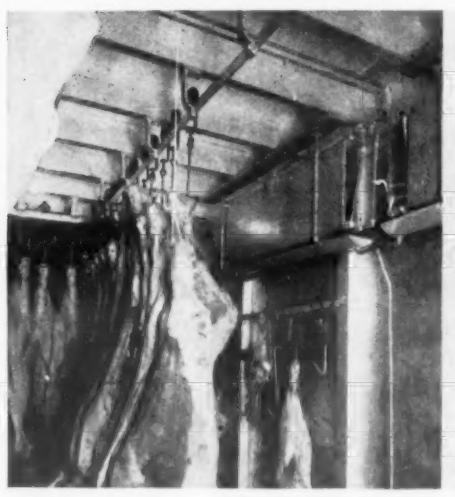
Special 8x3½x8½-ft. McCray florist refrigerator at the Favorite Flower Shop, on Park Ave. in New York City.

Comfort Cooling



An up-to-date restaurant is Thompson's in St. Louis, where 15 tons of air-cooling capacity have been installed. Two Ilg overhead cooling units appear in the background.

Packing House



Meat cooler of the Margolin Packing Co., Danville, Ill., which has 468 sq. ft. of Dole vacuum plate coil surface.

Display Cases

Clarendon meat market in Zanesville, Ohio, with one 6-ft. McCray fish case and three 12-ft. McCray display cases.

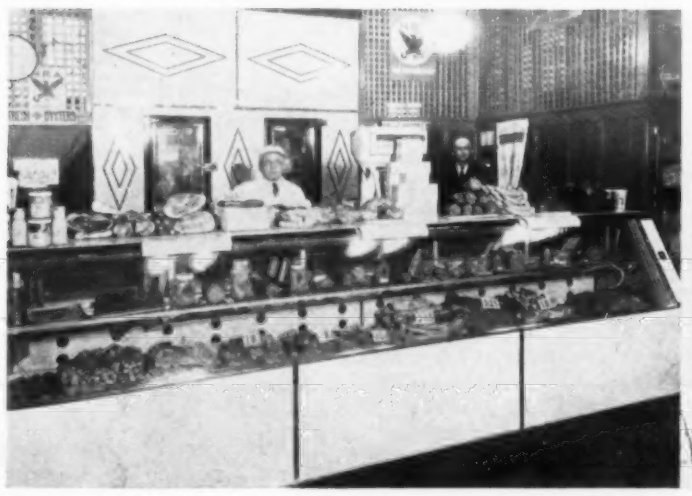
Fish Display

H. L. Forman's new "Chilspray" system of fish refrigeration (description on page 13) installed in the Gross Market, North Tarrytown, N. Y.

Cheese Storage

Large cheese storage room of the De-Mill Food Co., Chicago, with Dole vacuum plate coils and a Baker system.

Meat Market



Joseph Hajek (left), proprietor of the Hinky Dink store in Omaha, is proud of his new 12-ft. Friedrich Kelvinator-cooled case which he purchased from Dealer W. C. Shook (right).

Pastry Shop

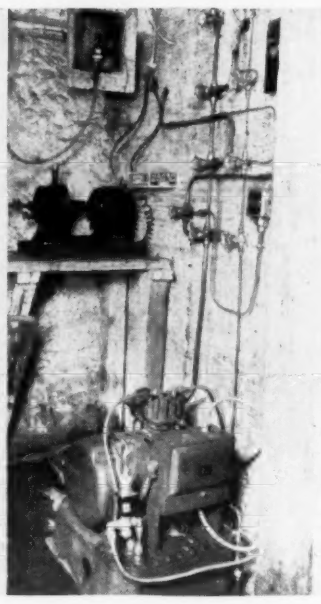
Hatjis French pastry shop, New York City, where General Electric "conditioned air" refrigeration has been installed by Rex Cole, Inc.

Chain Store

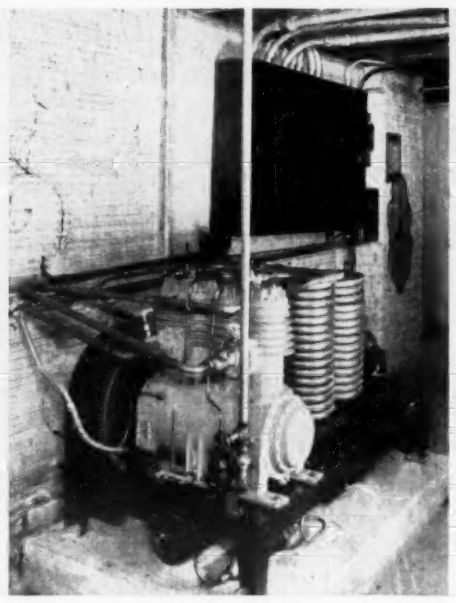
Three G-E display cases, a walk-in cooler, and a refrigerated vegetable box have been installed in Joe Fiacchen's Royal Blue Store, Chicago, by R. Cooper Jr.

Neat Installations of Commercial Refrigeration Equipment

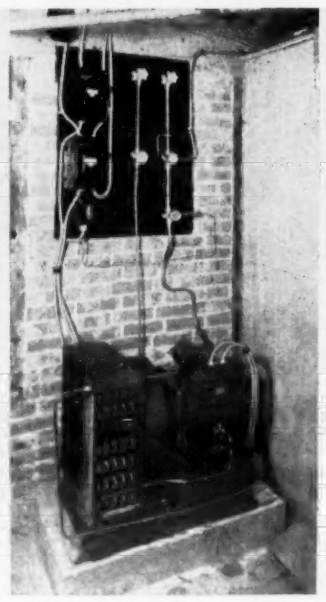
Inside view of a walk-in cooler in Michael's Berkshire market in New York. Both the "conditioned air" evaporator above and freezer box below (cooled by pipe coils) are served by G-E machines.



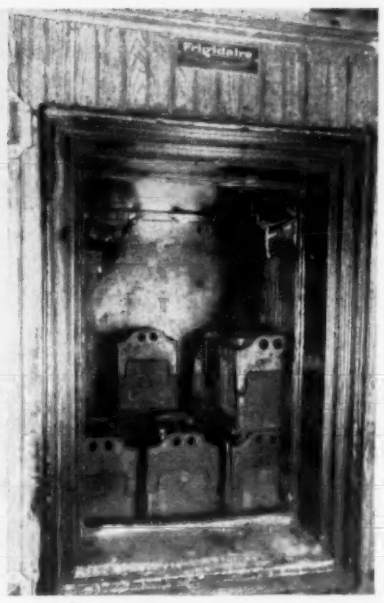
Water-cooled Westinghouse compressor in the Fifth Ave. Cafe, East Pittsburgh, serving a storage cooler, beer cooler, and hotel refrigerator.



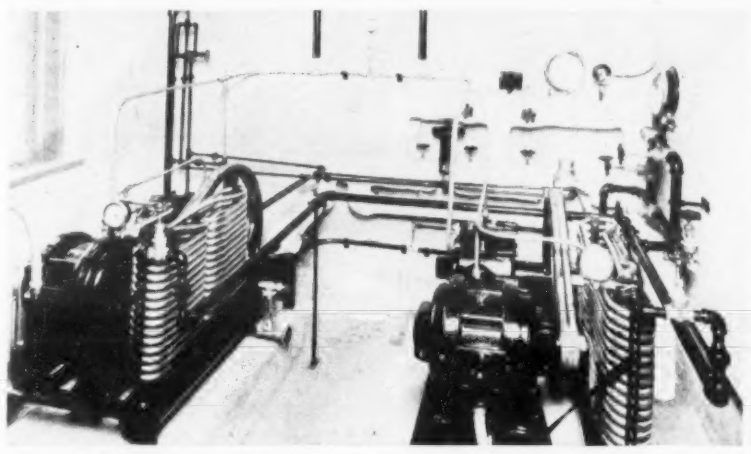
New 10-ton General Electric condensing unit installed in Crosby's restaurant, Cleveland, where it is connected to an air-conditioning system of several overhead and cabinet type room coolers.



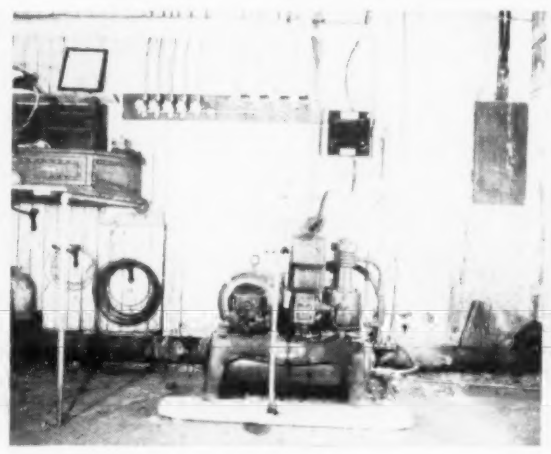
Air-cooled Westinghouse machine operating an 8x8x8-ft. storage cooler and a hotel refrigerator upstairs at the Fort Pitt Inn, Pittsburgh.



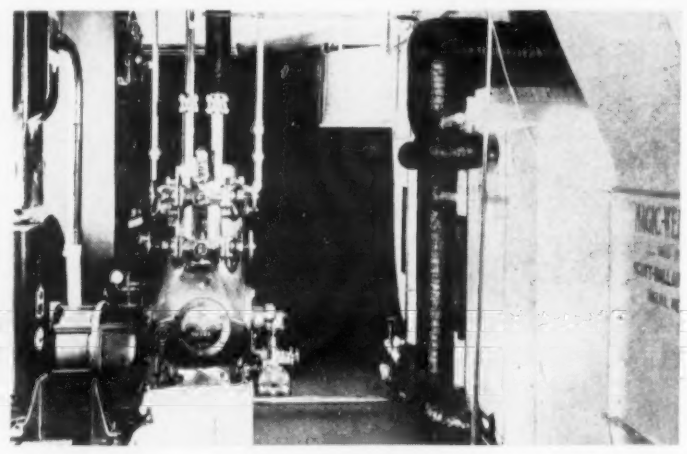
For testing storage batteries at 10 below, zero, and 10 above, Frigidaire provided this special refrigerator for the National Lead Co. of Brooklyn.



Installation of two model MC Baker machines in the Employes Home of Westfield State Farm, Bedford Hills, N. Y., where a temperature of 34° is maintained in three large storage refrigerators.



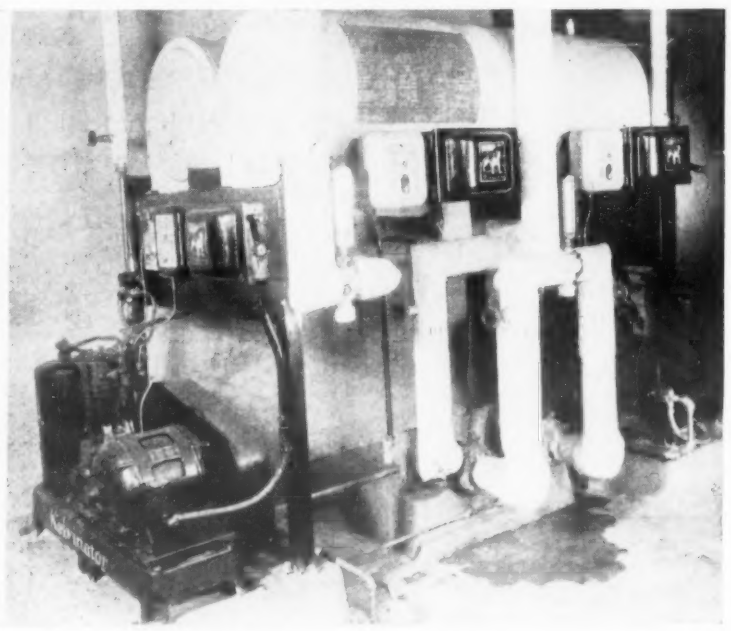
York 2-hp. machine providing refrigeration for Pennock's floral shop in Philadelphia. The floral case has three compartments.



Some 86,000 cu. ft. of Omaha's Fontenelle hotel are air conditioned by this Baker 40-hp. machine and the air washer at right distributes air through ducts to two coffee shops and drug store.

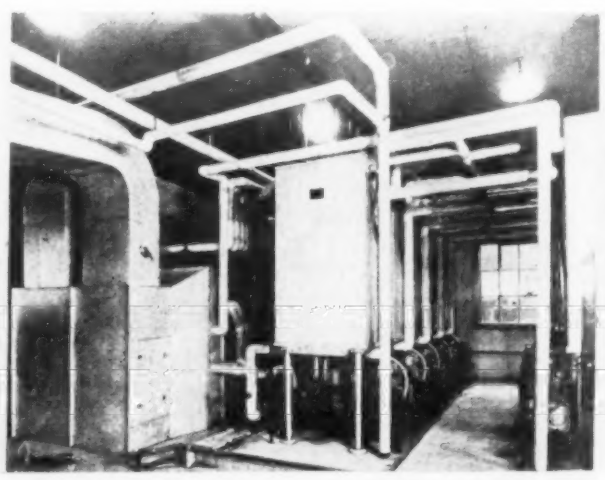
Interior view of an 18x7½x8-ft. meat refrigerator cooled by three Frigidaire FDX-1854 coils connected to a Frigidaire FW-6200 compressor in Berkeley Cafeteria, New York City.

Ice for New York's Hotel Lowell is manufactured by this 300-lb. bulk ice maker refrigerated by a 1½-hp. G-E.

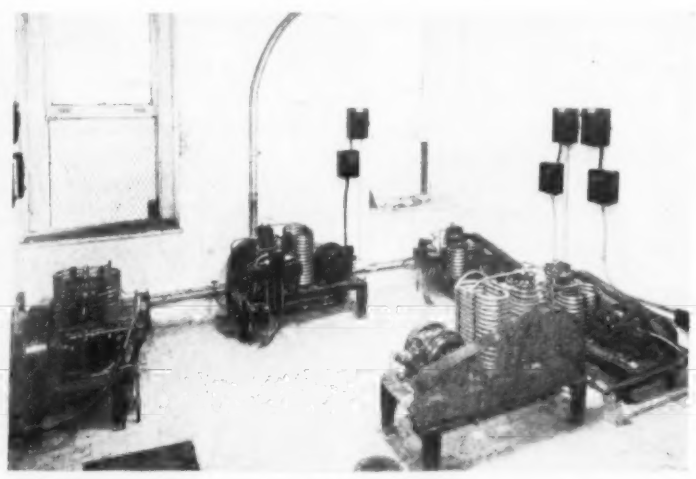


Operated by the two water-cooled Kelvinator machines, this large water-cooling tank serves drinking water by a circulating system to patients at the new Wills Eye Hospital, Philadelphia.

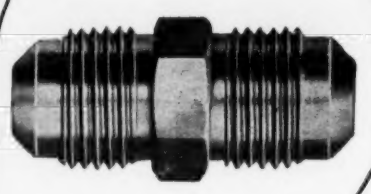
A Fedders forced convection cooling unit (on rear wall) cools beer barrels in this keg storage room of the Ryan restaurant, Buffalo. Keg cooling is one of the popular applications for this new type of evaporator.



This battery of 10 2½-hp. G-E condensing units, each with a Filtrine tank type water cooler above it, provided cold water for the air-conditioning system at G-E's "House of Magic" theater at A Century of Progress.



Neat compressor room in the Hotel Great Northern, New York City, showing three 1½-hp. G-E condensing units and two G-E ¾-hp. water-cooled machines. A 10-hp. machine is soon to be added for a drinking water system.



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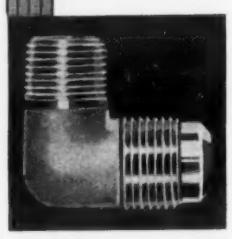

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Simple Installations Give Best Service, Commonwealth Edison Men Say

Wetherbee Relates Installation Practices of Kelvinator Distributor in Chicago

By John T. Schaefer

CHICAGO — For reliable, trouble-free service from a commercial refrigeration system, Commonwealth Edison engineers believe in *simple* installations, with just a limited number of standard parts. "Make your installation simple, the parts accessible and your service work will be easy; avoid gadgets and complicated hook-ups and your service calls will be few," they say.

Commonwealth Edison Co., Chicago's leading public utility, is the Kelvinator distributor here, and handles in addition several other lines of household refrigerators on a dealer basis. The company has been working with electric refrigeration since early days of the industry, and has developed a number of installation practices to which it adheres rigidly.

In charge of installation of commercial refrigeration systems is Don Wetherbee, refrigeration engineer and assistant manager of the company's refrigeration department. He is assisted by D. P. Tunstall.

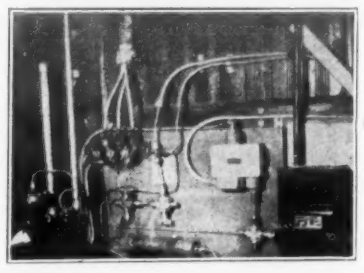
One of the basic installation policies is the use of a separate compressor for each temperature required, Mr. Wetherbee states. This permits operation of the compressor at the highest possible suction pressure, so that the efficiency of no compressor is penalized because one low side requires a lower pressure than others, as frequently happens on a multiple installation of several different refrigerators on one machine.

This also eliminates pressure reducing valves and other devices sometimes needed to operate more than one evaporator from the same machine, he points out, and thereby simplifies the installation.

Furnishing one compressor for each low side occasionally raises the first cost of an installation well above that of competitive bidders, Mr. Wetherbee admits, but frequently the purchaser can be convinced of operating economies which justify investment in the additional machines, he reports.

Compared with conventional methods of figuring commercial installations, this company uses small machines and considerably greater cooling coil surface, Mr. Wetherbee states. This again contributes to high efficiency of the compressor because the heavy coil surface helps operation of the compressor at a high suction pressure.

Panel Board



Mounted on a separate panel are all valves and controls removed from the condensing unit.

Cooling coils for all sizable commercial installations are built-to-order by a local coil manufacturer, Mr. Wetherbee says. In designing a cross-fin galvanized steel coil for a walk-in cooler, Commonwealth Edison estimators install ample primary coil surface, with about 1½-in. fin spacing and an average factor of .7 to 1 as the proportion of cooling surface to external area of the refrigerator. This depends largely upon the type of installation, of course.

By installing ample coil surface it is possible to secure the humidity conditions required for refrigeration of any food product, he declares.

A strong preference for the high side float system of refrigerant control and methyl chloride for commercial systems is evident at Commonwealth Edison's refrigeration headquarters, this combination having been used almost exclusively in commercial systems since 1926.

SO-2 as a Warning Agent

To the methyl chloride is added 5 or 6 per cent of sulphur dioxide as a leak detector, according to Mr. Wetherbee, and he is prepared to answer any objections to the combination of these two refrigerants.

"We first tried sulphur dioxide as a leak detector in July, 1929," he said, "and find the only possible trouble to be development of sulphurous acid when moisture gets into the system. We eliminate this trouble by dehydrating coils thoroughly in our own shops before installing them."

The advantage which Mr. Wetherbee cites for sulphur dioxide as a leak detector is that it not only warns people of a leak, but also permits easy location of that leak with an ammonia cloth.

Several years of experience with capacitor motors on refrigeration systems leads the Edison installers to use them on all equipment up to ¾ hp. which is the largest size capacitor motor now available to them Primary reason for their use is not their favorable power factor, as might be expected from a utility company, but their freedom from trouble, Mr. Wetherbee states. The company uses start-and-run capacitor motors (two-value type).

Motors Carefully Sized for Load

Every refrigeration motor is carefully sized to its rated load, he says. Underloading a motor causes it to operate at reduced efficiency (with higher power bills to the consumer), while overloading a motor contributes to mechanical trouble, he explains.

General hook-up and arrangement of parts in a commercial installation are standardized as far as possible by Edison installers to simplify service and facilitate replacement of a part from the company's service station where all parts and assemblies are kept in stock.

All auxiliary parts on the condensing unit are removed before installation and mounted on a small panel board alongside the compressor, leaving only the compressor, motor, and condenser remaining on the base. Parts of the condensing unit are thus easily accessible.

This centralizes the auxiliaries where they can be adjusted easily and removes them from the vibration of the compressor. On a typical panel board are the control, combination strainer and dehydrator, shut-off valves, the magnetic contactor (if used), etc. The company is an extensive user of mercury switches.

To reduce chattering of the water-regulating valve a vertical air cushion is placed in the line between the valve and the compressor. Mounted as a complete assembly with this cushion is a water shut-off valve. All nuts on the low side of the system are hydrolened to eliminate accumulation and freezing of condensation, Mr. Wetherbee points out.

Latest refinement in installation procedure is the use of flexible brass conduit to prevent the rusting which accompanied steel conduit of the flexible type.

Meat coolers are usually set to cut in at 40° F. and stop at 36° F. in the summer. In the winter it is sometimes helpful to reduce the cut-in and cut-out points to 37° and 33° F. respectively, to avoid the reduced air circulation which may cause sliminess of meats.

Mr. Wetherbee has found that on beer-cooling installations using the sweet water bath method of cooling draft beer, a loop of the liquid line tubing down through each beer coil will improve operation of the cooler materially.

The company has installed a large number of beer coolers this past summer, using mostly the water bath system of cooling, with a flat cross-fin coil to cool the water and 60 to 75 ft. of coil to cool the beer. Mr. Wetherbee stresses the necessity for an ample amount of tubing in the beer coil.

He is now figuring on a beer cooler which will employ the same kind of a beer coil, but with a refrigerant coil of the same general shape as the beer coil placed in the water bath inside the beer coil, thus dispensing entirely with the finned coil.

RECENT INSTALLATIONS

Among the commercial installations made this past season by Commonwealth Edison are a number of markets, restaurants, taverns, florists, etc., according to Don Wetherbee, refrigeration engineer of the company.

Just a few doors north of the Edison building on Clark St. is the Triangle restaurant in which a complete refrigeration installation has been furnished by the Edison Co. Here a 2-hp., 4-cylinder Kelvinator machine serves a 16x8x10-ft. walk-in cooler with a galvanized steel cross-fin coil, and a 8x3x7-ft. service box with a Kelvinator coil.

All refrigerating machines in the Triangle installation are placed just below the ceiling over the walk-in refrigerator so as not to take up floor space in the crowded arrangement of restaurant equipment.

The other refrigeration equipment includes a ½-hp. water-cooled Kelvinator cooling two 7x2½x6-ft. short order boxes; a 1½-hp. water-cooled Kelvinator refrigerating two 105-gal. Day & Night water coolers for a circulating drinking water system; a ½-hp. air-cooled Servel machine connected to a 6-ft. salad pan; and a ½-hp. Frigidaire machine cooling an ice cream cabinet.

The Triangle restaurant was air conditioned this past summer by a 60-ton carbon dioxide Carrier compressor installed by the Kroeschell Engineering Co., local air-conditioning contractors. The machine operates in the basement, distributing conditioned air through ducts to both the Triangle restaurant and the B/G Sandwich Shop next door.

Frank's Restaurant

Another Edison installation is Frank's restaurant on Elston Ave. where a ¾-hp. Kelvinator has been put in to refrigerate a 24-ft. bar with six draft arms, a 5-ft. bottle cooler, and a 4-ft. dairy compartment. Here also is a 1-hp. Kelvinator serving one large service box and two small ones.

Typical of Commonwealth Edison's practice of furnishing a separate compressor for each low side is a recent White Tower installation of a ⅓-hp. air-cooled Servel machine refrigerating a 6-gal. Day & Night water cooler.

Around the corner from the Edison building, on LaSalle St. is Kearin's Flower shop where a 1½-hp. Kelvinator machine has been installed to cool an 8x4½x10½-ft. flower box, an 8x3x10½-ft. flower box, and a 4x4x10-ft. flower box, all using iron pipe coils.

Application of the new Kelvinator forced convection cooling unit is demonstrated at Old Hickory Inn on Broadway where a 10x7x7 storage refrigerator for beer barrels is provided with such a cooler. It is refrigerated by a ½-hp. water-cooled Kelvinator machine.

Cooling the bar in this same restaurant is a ⅓-hp. Kelvinator. The bar has a 4-ft. bottle compartment (cooled with a small ceiling coil), and four draft arms, cooled by a sweet water bath with Radial fin coils.

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INSTALLATIONS

G-E PRESERVES FOOD FOR ANIMALS IN ZOO

By John T. Schaefer

CHICAGO—Preserving food for the animals in Chicago's new Zoological Park in Brookfield, Ill., is one of the interesting applications for commercial refrigeration discovered by salesmen of R. Cooper Jr., local distributor of General Electric equipment, according to T. B. Arnold.

The park is laid out so that a complicated system of moats and canals separates visitors from the animals, which are kept in natural settings.

The refrigeration installation includes a large storage room, 31x9x9½ ft., with three compartments for meat, vegetables, and fish. It is insulated with 4 in. of corkboard, and has doors lined with stainless steel, side walls finished to a height of 6½ ft. with white glazed tile, and a floor of hexagon white tile.

The meat compartment is refrigerated with a G-E CMF-6W water-cooled condensing unit operating in conjunction with two "conditioned air" evaporators, one an EC-9, the other an EC-4.

The vegetable compartment is cooled with an EC-9 "conditioned air" evaporator operating with a CMF-5W ¾-hp. water-cooled G-E machine, while the fish compartment is cooled with 1-in. steel pipe coils holding 28° F. from a CMF-5W ¾-hp. G-E machine.

Royal Blue Store

A new market installation made by the Cooper organization this past summer is that in the Royal Blue store on Fullerton Ave. here, of which Joe Fiacchen is the proprietor.

Here were installed two G-E display cases (one 10 ft. long, the other 8 ft. long), a 6x8-ft. vegetable refrigerator in the basement, and a 9x12x7-ft. walk-in cooler with a 6-ft. triple-glass display window. Front of the cooler was extended on each side to form a complete wall separating the store proper from the work room in the rear.

All refrigerators are cooled by "conditioned air" evaporators served by a G-E model CM-8W water-cooled machine. Temperatures maintained are 36° F. in the meat cooler, 40° F. in the display cases, and 45° F. in the vegetable box.

Replacing the former North Park State Bank in Chicago's North Park hotel is now the Brown Derby Bar which uses G-E refrigeration equipment to cool its beer. The new management moved out the old safety deposit boxes and cork-insulated the vaults with 2 in. of corkboard for storage of beer barrels.

Refrigeration equipment includes a CM-8W 2-hp. water-cooled G-E condensing unit, serving a "conditioned air" evaporator in the barrel storage "vault," and direct-expansion coils in a water-glycerine bath for cooling draft arms.

Refrigeration for Making Mascara

A novel use of commercial refrigeration in industrial processes is that of the Maybelline Co., manufacturer of mascara, a cosmetic for women's eyelashes. This company purchased a G-E model D-54 condensing unit and a tank-type water cooler to circulate cold water which cools the molds in which molten mascara is poured.

G-E Installs Cabinets In Own Cafeteria

CLEVELAND—A total of 315 cu. ft. of refrigerated storage space was provided to protect foods for General Electric employes when the company's cafeteria and restaurant at Nela Park here were moved from the Lighting Institute building to the Sales Promotion building recently.

In the cafeteria is a 45-cu. ft. refrigerator equipped with a double front which permits stocking of the cabinet from the kitchen side and removal of food from behind the counter. This is used for storage of general foodstuffs.

On another side of the cafeteria is a large refrigerated pan for salads and desserts, while on a third side is another 45-cu. ft. double-front refrigerator for dairy products. In the cafeteria is also a two-compartment ice cream cabinet, and a similar unit is in the restaurant.

A 60-cu. ft. refrigerator is located in the kitchen for use by the chef, together with another 120-cu. ft. refrigerator for general storage purposes, and a four-compartment ice cream cabinet. In the service pantry is a 45-cu. ft. refrigerator and a 14-gal. water cooler.

Serving the cook's refrigerator, the large storage and two cafeteria refrigerator, and the salad counter is a single compressor driven by a 1½-hp. motor. The ice cream cabinets have individual compressors. The pantry refrigerator compressor has a ½-hp. motor, the large water cooler a ¾-hp. unit, and another small water cooler a ½-hp. compressor.

Variety of Places Sold G-E Units In New York

NEW YORK CITY—Headed by L. Howard Jenks, Jr., the commercial department of Rex Cole, Inc., General Electric distributor here, has made a considerable number of commercial installations in the city during the past few weeks.

In the Buckingham Cafeteria at 15 W. 44th St. was installed a CM-6 1½-hp. compressor to refrigerate two counter and rear-counter service cabinets and two water coolers. A similar compressor was placed in the basement to cool a storage refrigerator equipped with three G-E "conditioned air" evaporators.

Three in Hotel

Three CM-6 compressors and two CM-5 ¾-hp. water-cooled compressors were installed in the Hotel Great Northern to cool a two-compartment storage refrigerator and four short order cabinets ranging from 12 to 14 ft. in length. A 10-hp. compressor is to be added for cooling water.

Cooling equipment for the six-tap bar in the Hans Yaeger restaurant, Lexington Ave. at 85th St., was sold by Cole's commercial division. The equipment has dry expansion coils, and cools by the sweet water bath method.

A novelty bar equipped with a ½-hp. air-cooled compressor and fin coils was installed in Charles Mayer's bakery and lunchroom at 1544 Third Ave., while at L'Aiglon, 13 E. 55th St., two storage cabinets once cooled by ice were relined, equipped with EC-9 and EC-7 evaporators, and connected to a CM-6 1½-hp. water-cooled compressor.

Beer Establishment

To cool three back-bar cabinets and a pre-cooler at Tappen's Corner, beer establishment at Eighth Ave. and 50th St., a CM-8 2-hp. compressor was installed.

Michael's Berkshire Market, 630 Lexington Ave., purchased a CM-5 ¾-hp. compressor to cool one of the two compartments of a storage refrigerator. In the general storage compartment is an EC-7 evaporator, while a pipe coil used with a CB-32 condensing unit refrigerates the low temperature (15-20° F.) compartment.

Three compressors were installed in Hotel Lowell at 28 E. 63rd St. One of them, a CM-6, operates the hotel's 300-lb. bulk ice maker. Another, a CM-8 3-hp. water-cooled unit, refrigerates four walk-in coolers, all of which have EC-7 or EC-9 evaporators. A CM-6 compressor cools three short order cabinets which have EC-7 evaporators.

Cole commercial men sold two beer dispensers, equipped with a 4½-hp. compressor and an ED-13 double refrigerant chilling unit, to the Silver Moon Restaurant at 138 E. 44th St. Two back bar cabinets and a walk-in cabinet are chilled by a CM-6 1½-hp. water-cooled compressor.

CHILSPRAY EQUIPMENT USED IN FISH MARKET

NORTH TARRYTOWN, N. Y.—The Chilspray refrigeration system, designed by H. L. Forman of Kitchawan, N. Y., for use in the refrigeration of fish in a market, has been installed in the F. W. Gross market at 23 Beekman Ave. here.

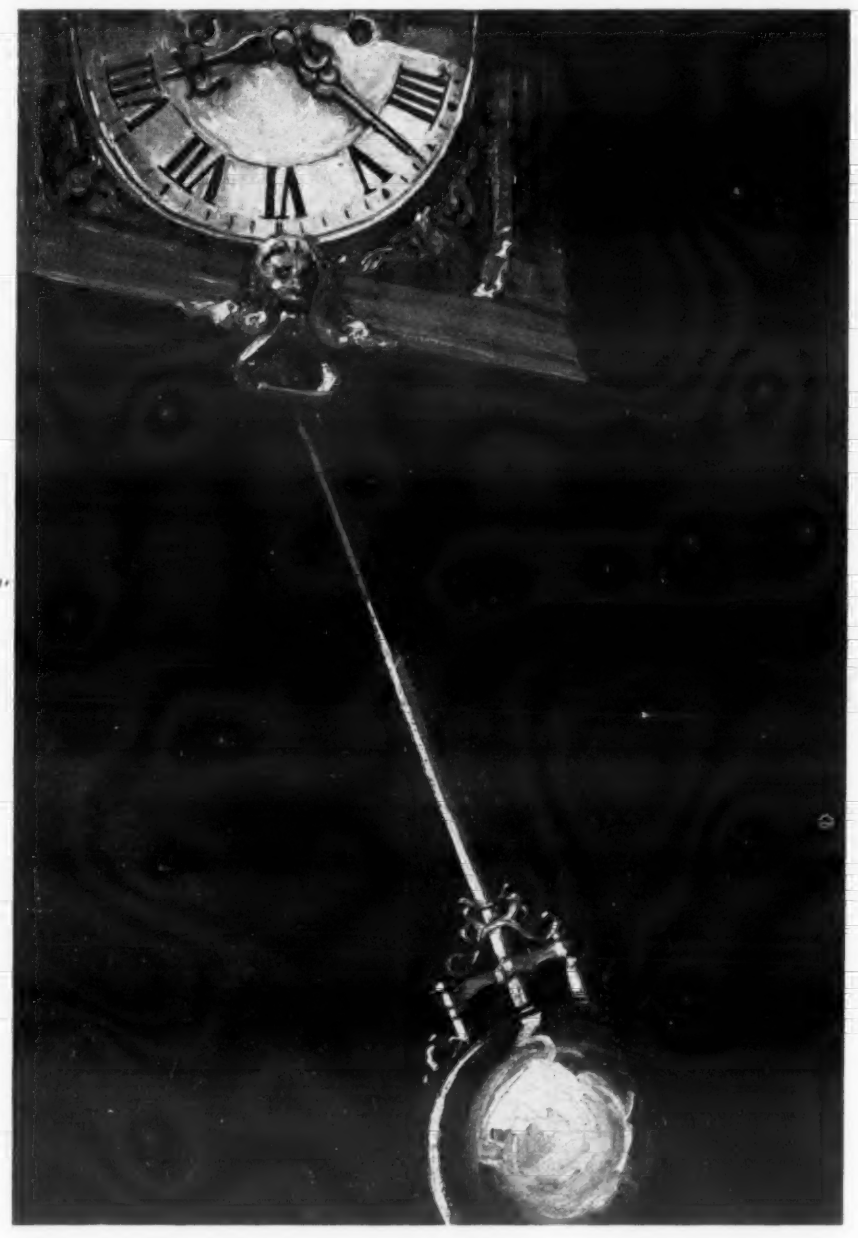
Primary purpose of the system is to utilize the better preservation facilities offered by mechanical refrigeration in the preservation of fish and to cut down the cost of operation by eliminating ice from the fish case.

This is accomplished by means of a cold water spray system which operates on a regular cycle by means of an electrical timing device. The complete system includes coils, valves, circulating pump, motor, and electric timer.

In the Gross market installation here the system is operating in a double-duty (upper display and lower storage space) refrigerated display case. One of the perforated spray coils extends across the width of the counter at the base of the display glass in the upper compartment. The spray is thrown forward and upward towards the rear of the case.

In the storage compartment the spray coil is at the rear of the case directly beneath the shelf which separates the two compartments and throws the spray downward and outward. The spray is put into action for one minute out of every hour by means of the electrical timing device. An electrically driven pump drives the water through the spray coils.

The water which is sprayed over the fish drips through the perforated shelves and drops into a well below the bottom shelf of the storage compartment. This reservoir is cooled by coils which keep the water at about 33° F. at all times.



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Lipman Soda Fountain System Designed To Meet Variable Load Conditions

By H. H. Greiling, General Refrigeration Sales Co., Beloit, Wis.

THE refrigeration load on the modern soda fountain is extremely variable, with two and often three rush periods each day during the summer months that test the ability of the refrigeration system to the limit. Added to that is the wide difference in temperatures required and the accurate temperature control demanded. Consequently, the refrigeration requirements are exacting, yet the system must be simple to install and to adjust, and easily understood.

The refrigeration system must, for instance, maintain constant temperatures in the ice cream section, these temperotures to be easily adjustable without appreciably affecting the temperatures in other parts of the system.

It must cool both plain and carbonated water, supplying a large amount of cold water during the peak water load periods, and yet so control the refrigeration that the water coils will not freeze up during periods of no water usage.

It must maintain suitable temperatures in the syrup jar enclosure.

It must permit the connecting of other units, such as salad section and back bar, into the system and provide such means of control that the refrigeration of these units will not interfere with the maintenance of proper temperatures in the soda fountain unit.

In the Lipman methyl chloride refrigeration system for soda fountains, the cooling coils are of the *continuous* type and are fed by thermostatic expansion valves.

The use of continuous coils assures a positive oil return to the compressor, eliminating the troubles that occur when a considerable quantity of oil accumulates in the low side, which often happens when a conventional type boiler and float valve are used.

Furthermore, a smaller quantity of refrigerant is required in the low side, and the refrigerant is circulated more rapidly.

Lipman Brine Tank Coil

The brine tank coil assembly consists of two helical wound coils, one above the other, attached to a plate so designed that it will fit any soda fountain brine tank having a standard boiler flange opening. The coils are connected and the inlet and outlet ends terminate in ⅜-in. pipe thread connections at the front of the plate. Expansion is into the upper coil and out of the lower.

This coil will maintain a lower average brine temperature at any given suction pressure than will a boiler. One reason for this is that the coil has ⅜-in. vertical spaces between turns and does not, therefore, retard the natural circulation of the brine at the upper part of the tank as a header does.

This improved circulation increases the transfer of heat from brine to coil, and also reduces the objectionable wide difference in temperature between the top and bottom of the brine tank which is present when boilers are used.

Another reason for better performance is that the top of the coil is flush with the top of the flange, providing a large amount of highly effective cooling surface near the top of the tank where the brine temperature tends to be warmest and the temperature difference between the brine and the coil is the greatest, whereas in a boiler the level of the refrigerant is carried about the center line of the flange.

A well is provided in the plate at the center of the upper coil for installing the thermostat bulb, which permits locating the bulb near the top of the brine tank where the greatest rise in brine temperature occurs during the machine shut-off period.

Lipman brine tank coils are made in two standard lengths, 10¼ in. and 16¼ in. The short coil fits any single row soda fountain or fixture that uses a flanged boiler with a header 10¼ in. long, and the longer coil fits any double row soda fountain or fixture that uses a flanged boiler with a 16¼-in. header.

The height from the center of the flange bolt circle to the bottom of the coil is only 7⅝ in. which is less than that of even the squat ice cream boilers.

Lipman Water Bath Coil

This coil assembly consists of one helical coil attached to a circular plate designed to fit the standard boiler flange opening. The inlet and outlet ends terminate in ⅜-in. pipe thread connections at the front of the plate. All of the coil surface is effective, making it possible to install effective cooling surface near the top of the water bath.

During periods of little or no water usage, the coil is covered with an ice formation 10 or 12 in. in diameter. The system is so arranged that under these conditions the refrigerant that enters the coil is largely "spent," with the result that the ice formation does not continue to grow but reaches a balanced thickness, with the water bath at about 38° F.

When water usage occurs, the water bath adjacent to the water coils is warmed up and naturally rises to the top where it comes in contact with the ice, and then sinks to the bottom of the bath. Thus, locating the refrigerating coil near the top of the bath induces a natural circulation of water through the full height of the bath and accelerates the transfer of heat.

Order of Expansion

One thermostatic expansion valve is required for a soda fountain unit, and it is located in the dry storage compartment adjacent to the water bath, where it is accessible for adjustment.

The expansion valve outlet is connected to the brine tank coil inlet with a run of ½-in. copper tubing. The brine tank coil outlet is connected to the water bath coil inlet with another run of ½-in. tubing, which is carried up through the syrup rack in order to refrigerate that compartment.

The suction to the machine connects to the water bath coil outlet. The thermostatic bulb of the expansion valve is clamped on to the outlet end of the water bath coil.

Syrup Rack Refrigeration

Because of the low temperature of the refrigerant that passes through the line of copper tubing in the syrup rack enclosure, the greater part of this line is installed near the top of the enclosure.

The line is not permitted to come in contact with the syrup jars, and because of its location, the circulating air cools the jars very uniformly.

The placing of the refrigerant line at the top of the enclosure also prevents the freezing up of the water lines, which are usually carried along the bottom of the syrup enclosure.

The use of a thermostatic expansion valve enables the system to operate on a variable suction pressure similar to flooded systems, since the valve increases the feed of liquid as the refrigeration load increases, and that, in turn, increases the suction pressure.

The rate at which the expansion valve feeds the liquid into the brine coil is controlled by the temperature of the bulb, which is attached to the outlet end of the water bath coil at a point where it is always submerged.

This arrangement permits the bulb to remain at water bath temperature until enough liquid has been fed into the system to frost through.

When the ice formation on the water bath coil has built out far enough to cool the bulb below the temperature of the water bath, the valve will begin reducing the liquid feed and as the ice builds out farther, the liquid feed and suction pressure are reduced still more until finally all the refrigeration is done in the low temperature brine tank coil.

Temperature Control

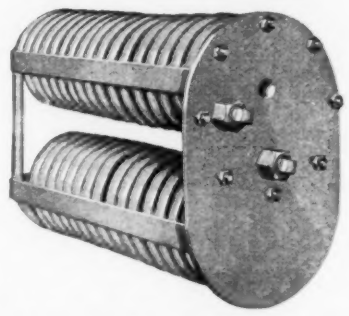
Temperatures are regulated by means of a thermostat and a low-pressure control electrically connected in parallel. The switches in both controls must open in order to stop the machine, but the closing of either switch will start it. The bulb of the thermostat is installed in the well in the brine tank coil plate, as previously described.

Primarily, the thermostat controls the temperature of the brine and the ice cream, but indirectly it controls the temperature of the syrup and water bath, since it operates on a close temperature differential and a slight heat leakage through the brine tank insulation causes it to start the machine at intervals.

The function of the low pressure control is to start the machine immediately when a large water cooling demand occurs. It is connected into the low side of the system at the water bath coil inlet, and is adjusted to start the machine when the low pressure rises a little above the pres-

(Concluded on Page 15, Column 1)

Brine Tank Coil



As described herewith, this coil is designed to fit a soda fountain brine tank.

Lipman Brine Coil Capacities—B.t.u. Per Hour

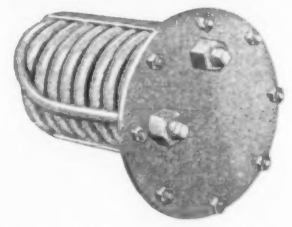
Coil D1948—10¼ in. Long

Suction Temp.	Pressure	Average Brine Temperature −10°	−5°	0°	+5°	+10°	+15°	+20°
−25	9″ Vac.	740	1020	1370	....	....	....	....
−20	6″ Vac.	560	830	1150	1580	....	....	....
−15	3″ Vac.	350	630	930	1320	1730	....	....
−10	0	....	380	680	1050	1490	1980	....
− 5	2 lb	....	....	420	760	1120	1650	2230
0	4 lb	....	....	....	440	800	1280	1920
+ 5	6 lb	....	....	....	....	450	890	1430
+10	9 lb	....	....	....	....	....	490	990
+15	11 lb	....	....	....	....	....	....	540

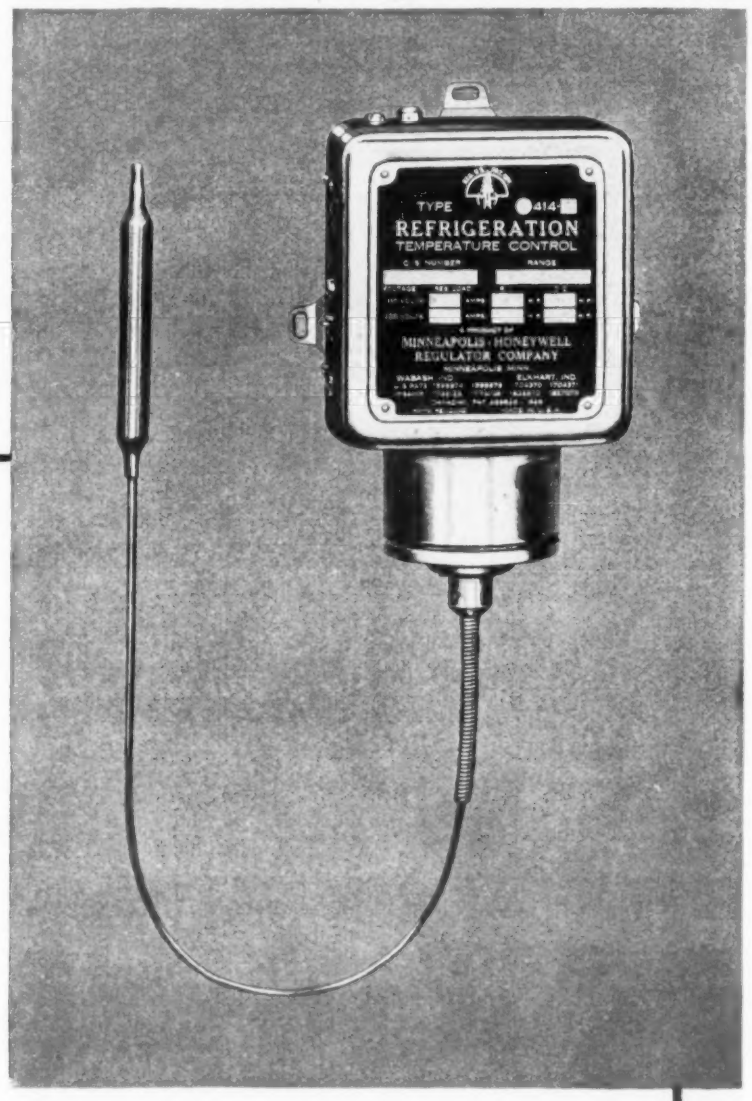
Coil D2134—16¼ in. Long

Suction Temp.	Pressure	Average Brine Temperature −10°	−5°	0°	+5°	+10°	+15°	+20°
−25	9″ Vac.	1200	1650	2200	....	....	....	....
−20	6″ Vac.	900	1330	1850	2550	....	....	....
−15	3″ Vac.	560	1020	1500	2130	2800	....	....
−10	0	....	620	1100	1700	2400	3200	....
− 5	2 lb	....	....	680	1220	1800	2670	3600
0	4 lb	....	....	....	700	1300	2070	3100
+ 5	6 lb	....	....	....	....	730	1440	2300
+10	9 lb	....	....	....	....	....	800	1600
+15	11 lb	....	....	....	....	....	....	880

For a Water Bath



This coil cools a water bath, and develops an ice reserve during light loads.



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Less Service

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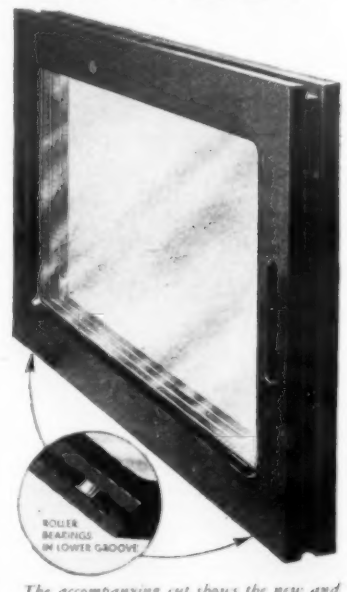


The accompanying cut shows the new and improved roller bearing feature of Ace hard rubber door frames.

SHOWS APPLICATION TO SODA FOUNTAINS

(*Concluded from Page 14, Column 5*)

sure that normally occurs during the machine shut-off period. In actual operation, the sequence of events is as follows:

The thermostatic expansion valve bulb must ordinarily be encased in ice to maintain normal liquid feed. If, however, a large water load should occur while the machine is shut off, the ice on the water bath coil would begin to melt and the exposure of the expansion valve bulb to warmer temperatures will open the valve and feed liquid refrigerant into the system, causing an immediate rise in back pressure above normal cut-in pressure.

The low pressure control will then start the machine, which will continue to operate until the ice accumulation again surrounds the expansion valve bulb. The pressure control is set to cut out at a pressure slightly above the pressure at which the thermostat cuts out, and with this arrangement of controls, the ice cream compartment temperatures may be accurately controlled and yet the machine is quickly responsive to water cooling demands.

Multiple Fountain Installations

Two soda fountains may be connected to one machine by using another thermostatic expansion valve and connecting the coils in the second fountain exactly as in the first. No additional controls are required.

In instaliations of this kind, the bulb of the thermostat should be installed in the fountain that receives the most usage.

Features of the System

1. The use of only one liquid control valve on a soda fountain unit results in simplicity of refrigerant control.

2. The location of the liquid control valve in the dry storage compartment makes it easily accessible for adjustment and service.

3. One liquid control valve replaces the two float valves and one suction line pressure reducing valve that are required in soda fountains using conventional type boilers in the brine tank and water bath.

4. Thermostat gives close control of ice cream temperatures.

5. Low pressure control assures rapid response to water cooling demands.

6. Coils are simplified, standardized, and have large refrigeration capacity in proportion to space occupied.

7. Brine tank coil induces efficient brine circulation, resulting in small temperature difference between top and bottom of brine tank.

8. Continuous type coils assure positive oil return to compressor, even when oil traps occur in suction line or when machine is located higher than the coils.

Salad Section and Back Bar

The standard water bath coil is used in the brine tank of the salad section when the tank is provided with a standard boiler flange opening, and this coil is fed by a thermostatic expansion valve, the bulb of which is clamped to the suction line at a point inside the refrigerated section and close to the outlet end of the coil.

A standard Lipman Discfin evaporator, fed by a thermostatic expansion valve, is used in the refrigerated section of the back bar. The expansion valve bulb is clamped to the suction line at a point inside the refrigerated section and close to the outlet end of the coil.

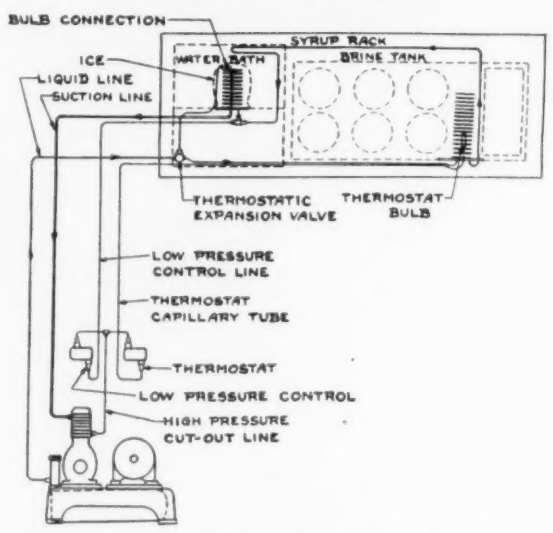
Because of the fact that the salad section and the back bar are usually separated by an aisle, it is generally advisable to use two expansion valves. Both units could easily be handled by one valve, but the cost of running two insulated lines under the floor between the units would offset the cost of the additional valve.

Pressure Differential Valve

In order to apply refrigeration to additional units which must be maintained at higher temperatures than are required in the soda fountain, it is necessary to install a pressure differential valve in the suction line from such units, by means of which valve the cooling coils in these units may be operated at a higher back pressure.

A simple adjustable spring loaded check valve, which provides an ample range of adjustment and has a packless type stem, is used for this purpose. When a salad section and back bar both are to be connected into the system, only one of these valves is usually necessary, because the two suction lines from these units can be tied together and the valve installed in the common line.

Single Fountain



Hook-up of a single fountain using the Lipman system of soda fountain refrigeration, a low pressure control, and a thermostatic expansion valve.

Multiple System

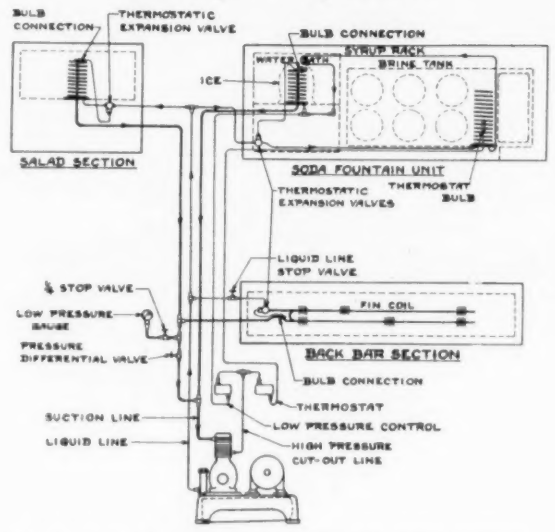


Diagram of a fountain, back-bar, and salad counter installation, each low side using a thermostatic expansion valve.

HARRISON INSTALLS RUSS BEER COOLERS

NEWARK—Philip H. Harrison & Co., northern New Jersey distributor for General Electric refrigeration equipment, recently installed two 1-hp. G-E compressors to serve bars erected in Newark Athletic Club by an affiliated concern, E. H. Harrison & Brother.

Both bars are equipped with Russ Instant Coolers, with the General Electric refrigeration equipment.

The larger of the two bars adjoins the club's main dining room, and the wall decorations, furniture, and appointments are designed after the manner of an old English tavern. The smaller bar is located in the Tiger room on the third floor.

The opening of the main bar was the occasion for a gathering of club members, preceded by a dedication in which Philip Harrison, head of the distributorship and a former president of the club, made a brief address.

REPEAL MAY STIMULATE ICE CUBE MAKERS

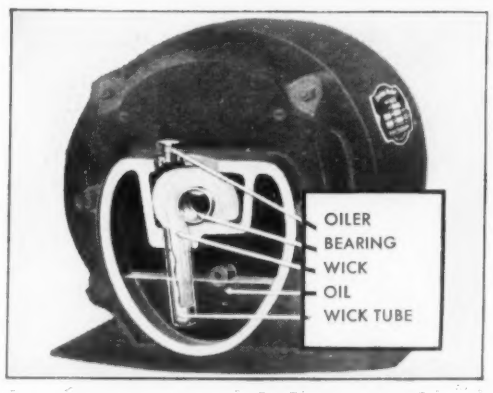
BUFFALO — Officials of Fedders Mfg. Co., Inc., are expecting prohibition repeal to give considerable impetus to sale of the company's line of electrically refrigerated ice cube makers.

The units, in capacities ranging up to 576 cubes per freezing, are adaptable for connection with existing refrigeration systems using any standard refrigerant except ammonia.

Only Delco Motors HAVE THESE 3 FEATURES

Non-Spillable End-Head

Both over-oiling and leaking on the windings are effectively prevented by this exclusive feature of Delco refrigerator motors. In combination with the patented oil reservoir and the special arrangement of the wick and oil control, this improvement in Delco motors also assures retention of oil during shipment, installation, *and* operation. These advantages constitute Delco's SEALED LUBRICATION —an important factor in assuring satisfaction to your owners long after the warranty period of the refrigerator itself has expired.

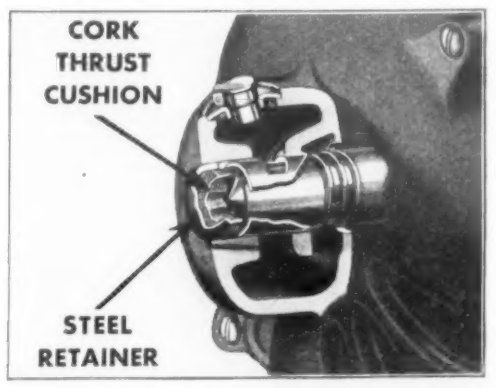


Rubber Cradle Mounting

By literally *floating* the motor in rubber, with no metal-to-metal contact whatever, this second exclusive Delco feature completely insulates the motor mounting against vibration and noise. The rubber is vulcanized to both the motor ring and the mounting. It permits sufficient rotative twist, yet prevents mis-alignment of shaft or pulley. Creeping is impossible, and oil cannot get in to cause deterioration. This rubber cradling is another reason why Delco motors help to keep the users of Delco-powered refrigerators satisfied.

No End-Play Noise . . .

End-play is inescapable in motors which operate belt-driven compressors. Delco motors, however, eliminate the usually attendant noise with a cork insert, pressed into the end-head of the steel shell. This cork cushions the longitudinal movement of the rotor. It is amply lubricated always . . . will not wear out . . . and needs no adjustment or replacement. The elimination of end-play noise is, consequently, a *permanent* advantage of Delco refrigerator motors.



For your customers' satisfaction, and in the interests of your warranty costs, consider all three of these exclusive features when you select compressor motors.

NRA MEMBER U.S. WE DO OUR PART

DELCO PRODUCTS CORPORATION, DAYTON, OHIO

INSTALLATIONS

LOUISVILLE MARKETS BUYS 5 CRUSE CASES

LOUISVILLE, Ky. — Four display case installations have been made in Louisville markets recently by the Cruse Refrigerator Co. here, according to W. C. Cruse, Sr., president of the organization.

First installation is in Schaefer's Market, and consists of a Cruse overhead-coil-type display case and a 10-ft. refrigerated "vegeteria" case for display and preservation of fruits and vegetables.

Another installation is in Kreitman's Meat Market, and is a 12-ft. case with all interior space visible to customers. Forty-eight in. high, the case has a bottom shelf 24 in. wide, a middle shelf 22 in. wide, and a top shelf 18 in. wide.

Near either end of the case is a fin coil extending from the top of the case to the middle shelf.

Framework of this case is of yellow cypress, porcelain-clad inside and out, with polished metal trimmings. The case has two sets of doors, one serving the two upper shelves, the other the bottom shelf. Air is circulated between the glass plates at the front of the case to prevent sweating. Four in. of Armstrong corkboard are used to insulate the case.

Two other installations are in two markets operated by H. L. Garrett of Louisville. When the stores were remodeled recently, Mr. Garrett installed top-display cases in both of them. These cases have a single display shelf, "blind" storage space in the bottom, three plates of glass at the front, and are insulated with 4 in. of corkboard.

One Westinghouse Cools 4 Cafe Boxes

(*See Picture on Page 11*)

PITTSBURGH — The first installation of a Westinghouse RW-1 water-cooled commercial condensing unit to be made in this city was recently completed in the Fifth Ave. Cafe by the Danforth Co., Westinghouse distributor.

The installation was made principally for beer-cooling purposes.

The RW-1 unit operates a four-valve installation, consisting of a large storage cooler in the basement, cooled by a 500-F "humidi" cooler, a precooling coil box with submerged coil in the storage cooler, a five-spigot draft cooling box in the bar, and a large service refrigerator.

Capacity imposed on the compressor is as high as six barrels of beer per day, according to H. A. Daum, commercial supervisor for the Danforth Co., who with J. A. Thurn, commercial salesman, sold the installation.

KELVINATOR COOLS BRINE FOR DRUG MANUFACTURER

DETROIT—A Kelvinator 2-hp. condensing unit has replaced an old-style refrigeration system in the plant of the Frederick Stearns Co., drug manufacturer of this city.

The Kelvinator equipment is being used to cool brine in a circulating system to 12 to 15° F. The cooling system is used in the manufacture of perfume and hair tonic.

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. . . to Resist Corrosive Action

Superior Galvannealed is recognized as an outstanding steel sheet, for interior or exterior use where usual corrosion producing elements are present. In addition to its highly rust-resisting qualities, it combines other essential features that are of fundamental importance in the construction of high quality cabinets.

★ Superior Galvannealed is a special analysis sheet steel.

★ A hot dip heat treated zinc coating is *bonded* to the base metal.

★ The coating will not chip, flake or peel under the most difficult forming operations.

★ The surface will take and retain any finish—paint, lacquer or enamel.

The Superior Sheet Steel Co.

Canton, Ohio

Division of Continental Steel Corporation

Superior Galvannealed PATENTED PROCESS

Electric Refrigeration Used in Manufacture of Tar Oil To Remove Naphthalene

By M. P. Stoney
Manager of Refrigeration Dept.
Merchant & Evans Co.

IN many manufacturing processes, it is frequently necessary to make a more or less complete separation of one or more constituents from a given material. This is accomplished by various methods including distillation, precipitation by the addition of other substances or by cooling either by exposure to normal atmospheric temperature or by artificial refrigeration.

Recent developments in electric refrigeration have placed in the hands of manufacturers an economical method of carrying out such operations during all seasons of the year at any desired temperature, simplifying the operation and insuring a uniform product irrespective of outside temperature conditions.

One of the products successfully handled in this manner is tar oil, containing naphthalene in solution. This oil is usually saturated with naphthalene at the prevailing atmospheric temperature, and will continue to deposit crystals until the temperature has been lowered to about 15° F.

The application of commercial refrigeration to the problem greatly simplified the process of manufacture by providing a means of separation of naphthalene at any season of the year, thus enabling the manufacturer to offer for sale throughout the year products recovered by refrigeration having a combined value much higher than the value of the original oil at a cost for equipment, installation, upkeep, depreciation, labor, and overhead necessary in the process of less than 0.0177 cents per gallon.

Outline of Equipment

The accompanying photo illustrates the general refrigeration and tank installation. The tank "T" is approximately 5 ft. inside depth with a total capacity of 1,500 gals. In this tank is installed a cooling coil "C" composed of 800 lineal ft. of ½-in. seamless copper tubing properly manifolded at "M." These coils are arranged to reduce resistance to the minimum so as to prevent excessive pressure between the inlet coil and the outlet at the suction side of the compressor.

Fitted, as indicated at "E", is an expansion valve to which the refrigerant gas passes from a magnet valve "V" controlled by a hand switch "S." The inlet and outlet terminals of the coil are connected with the corresponding valves on the compressor located at any convenient adjacent position. The process of refrigeration is started and/or stopped by closing and opening the hand switch "S."

Expansion in Coils

When expansion of the refrigerant in the coils has progressed to a determined point, electric contact is effected through a mercury tube switch in the low pressurestat "P" which starts the motor and establishes the circuit of refrigeration.

The compressor continues running until the temperature of the solution in the tank "T" is reduced to 20° F. when the control switch "K" actuates magnet valve "V" which in turn cuts off the supply of refrigerant from the expansion valve. When the compressor exhausts the coils, the pressurestat "P" operates to break the electric circuit contact and stop the motor.

At the conclusion of the processing, the cooled oil is drawn off. If the refrigerant were allowed to remain in the low side of the coil "C" this subsequently applied heat would produce excessive pressure which would impair the life of the compressor.

The tank is insulated with about 6 in. of rock wool to protect it from outside atmospheric temperatures, and is fitted with a rotating mechanical agitator "A" to facilitate circulation of the contents during processing.

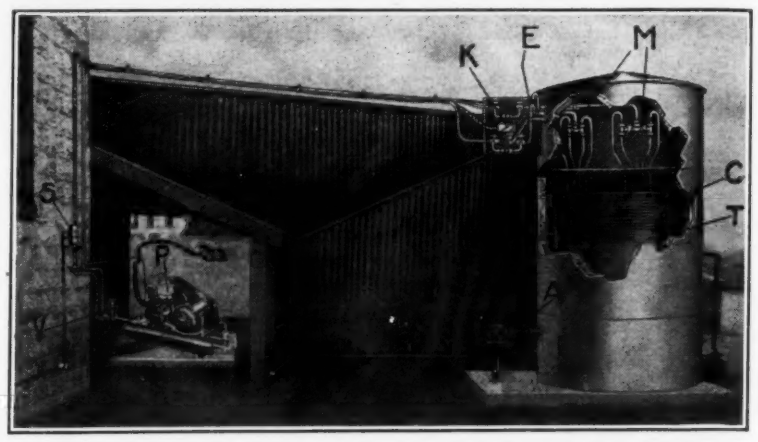
The water-cooled compressor is driven by a 2-hp., 440-volt, a.c., 3-phase motor which has ample capacity to cool 3,000 to 4,000 gals. in 24 hours, depending on weather conditions.

BRUNSWICK ARCHITECTS AID BAR DISTRIBUTORS

CHICAGO — Fifteen architectural planning service divisions are scattered among the branch offices of the Brunswick-Balke-Collender Co., manufacturer of bar equipment, to help distributors sell the Brunswick line, officials of the company have recently announced.

These offices are staffed by architects and designers who render wash drawings of specially designed bars for prospective customers. In some instances the Brunswick architectural planning service takes charge of the design and installation of a complete job.

Much attention is given to the incorporation of modern refrigeration in the Brunswick-Balke-Collender fixtures by the architectural planning service, company officials point out.



A new application of electric refrigeration to industrial processes is removal of naphthalene from tar oil with above equipment, described at left.

Kelvinators Units Are Installed in Institutions

DETROIT—Kelvinator Corp. has recently made a number of installations of commercial refrigeration equipment in state and federal institutions.

In the Newberry state hospital at Newberry, Mich., in the Upper Peninsula, Kelvinator has installed a 1½-hp. condensing unit and 4 X-fin coils for a 12x8x9-ft. Chrysler-Koppin storage refrigerator; a 1½-hp. condensing unit for a two-body mortuary refrigerator with parts compartment; and a D-150 Kelvinator household refrigerator for the diet kitchen.

At the Marine hospital in Baltimore, Md., Kelvinator has installed six PK-70 Kelvinator household refrigerators, a 1-hp. unit with cross-fin cooling units for a mortuary refrigerator, and a ½-hp. unit for a Halsey Taylor X-ray developing tank cooling unit.

The federal government's narcotic farm at Lexington, Ky., has been equipped with nine PK-70 refrigerators for diet kitchens, a 2-hp. condensing unit, and three-fin coils for a six-body mortuary refrigerator, and a ¾-hp. condensing unit for a Halsey Taylor X-ray developing tank cooling unit.

FRIGIDAIRE COLLECTS DRY CLEANING VAPOR

BAKERSFIELD, Calif. — Electric refrigeration is being used by the Citizens' Laundry here to reclaim the vapors of Zoric, cleansing fluid used in dry cleaning. The equipment consists of a Frigidaire DX-1878 evaporator and an FW compressor.

The evaporator is installed vertically in a special cabinet in which clothes are placed for cleaning. A zero coil temperature is maintained to condense the Zoric vapors as they rise from the clothes during cleaning.

Condensation of the Zoric vapors serves to deodorize the cabinet and the clothes, and to collect static dust contained in the vapor as a result of the cleaning process. Each third fin of the evaporator is arranged to drain off the dust-laden Zoric condensate into an accumulator and strainer outside the cabinet.

Owner of the laundry estimates that the installation has cut the cost of cleaning fluid 50 per cent, according to Al Harrison, Frigidaire sales promotion manager in the Los Angeles district. Sale was made by F. E. Vickery, Bakersfield Hardware Co., Frigidaire dealer.

Commercial Condensers, Evaporator Coils And Tubing For Refrigeration Units Of All Capacities

Complete Manufacturing Department

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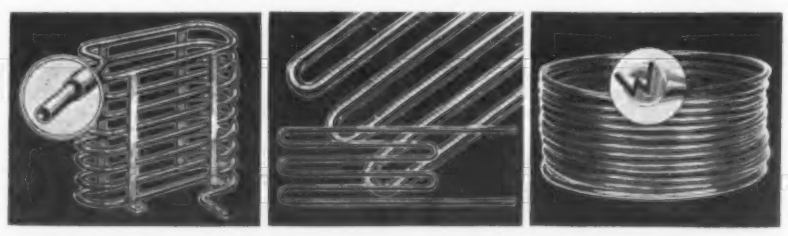


HERE you get *action—and* quality—*and* efficiency! Whether it is famous Wolverine "W" seal dehydrated "rush" from our great stocks or special coils for the smallest or largest units, made to your blue prints—you can depend on these three things—for these are the foundation of our acknowledged leadership in the refrigeration field. Our staff and 5 acres of the finest seamless tube equipment in America are at your service. Wolverine Tube Company, 1491 Central Ave., Detroit; 1015 E. 16th St., Los Angeles; Export Dept., H. M. Robins Co., 120 Madison Ave., Detroit; Warehouses at many points.

WOLVERINE
Seamless Copper Tubing
For Refrigeration

NEW EQUIPMENT

MARSH INTRODUCES FOUR THERMOMETERS

CHICAGO—Four new products—two industrial dial thermometers and two recording thermometers—are being introduced by the Jas. P. Marsh Corp. here, according to A. D. Rose of that organization.

The new dial thermometers are of two types, type 57 being a vapor tension device, type 58 a gas-filled indicator. These instruments are available in self-contained models or for distant readings.

Distant-reading thermometer has a flexible connecting type between the dial instrument and the bulb. Self-contained instrument has the bulb fastened directly to the dial, standard size of which has a 5-in. diameter.

Type 57, the vapor tension thermometer, is designed for applications to temperatures below 500° F. Type 58, the gas-filled instrument, is intended for application to temperatures up to 800° F. Both instruments operate on the bourdon tube principle.

Marsh' new recording thermometers are also being made in a gas-filled and a vapor tension model. Type 59-FG, the gas-filled device, is suitable for all temperature applications up to 1,000° F.

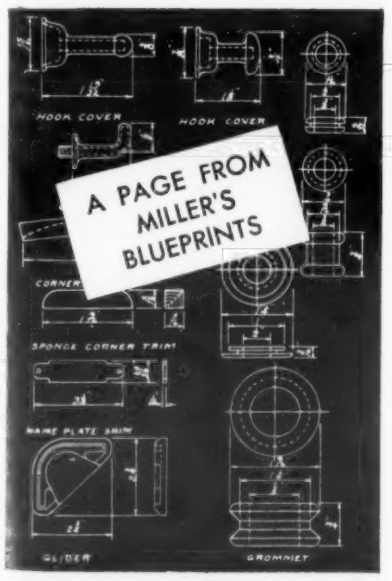
The vapor tension thermometer, type 59-VT, may be used for applications to steam and hot water temperatures where the operating range is not more than 30 per cent of the total scale range.

SCOTT APPOINTED REVERE VICE PRESIDENT

NEW YORK CITY—Robert G. Scott has been appointed vice president of Revere Copper & Brass, Inc., in charge of the company's Taunton-New Bedford division with headquarters at Taunton, Mass., according to C. D. Dallas, president of the organization.

Previous positions held by Mr. Scott with the Revere company were managership of the Revere rolling mills at Baltimore.

WANTED
Rubber Problems



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Compounds which eliminate odor, avoid checking and cracking, retain their "spring," resist deteriorating action of butter, grease, mayonnaise. Our blueprints cannot fail to interest and help the production engineer. Yours for the asking. Just write. Miller Rubber Products Co., Inc., Akron, O.

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Norge Commercial Line to Employ Rollator

DETROIT—Both air- and water-cooled condensing units will comprise the new line of commercial compressors to be placed on the market by Norge Corp. sometime in March. The line was announced in the Nov. 15 issue of ELECTRIC REFRIGERATION NEWS.

These units will employ the rollator type of compressor used by Norge in its household refrigerators.

The new Norge commercial machines will employ methyl-chloride as a refrigerant and are to be built in both air- and water-cooled types. The largest unit in the 1934 line will consist of a 1½-hp. water-cooled unit. Two compressors will be used in the various models—one having a displacement of 2.4 cu. in. per revolution, and the other 8.3 cu. in.

Water-cooled machines have the condenser located in the base, and provide compressor cooling by water circulation through a coil inside the compressor dome, according to Mr. Hughes.

Air-cooled units have an oil-cooling circuit consisting of a small section of the finned condenser coil through which the compressor oil is circulated. Air-cooled compressors are all driven by V-belts, and have circulating fans on both motor and compressor shafts.

The range of operating speeds will be from 500 to 1,000 r.p.m. The shaft seal is on the high side of the compressor and is of the balanced pressure type, operating in a bath of oil.

Edward Hughes is engineer in charge of the commercial refrigeration department, while Harry Newcomb is sales manager of the commercial refrigeration division.

In addition to commercial refrigeration units, the commercial department is also producing a winter air conditioner which is being merchandised under the trade name of Norge Aerolator. Sales activities are directed by Mr. Newcomb. Lester Keilholtz is engineer in charge of this division.

AMERICAN BOSCH BRINGS OUT THREE HUMIDIFIERS

SPRINGFIELD, Mass.—Just placed on the market by American Bosch Corp. here are three new humidifiers ranging in price from $78.50 to $110.

Model HA-1, most expensive of the line, is designed for direct connection with the existing water supply. Controlled by a humidistat, this model automatically supplies moisture to the air when the relative humidity falls below 45 per cent. The unit's water supply is automatically controlled.

Model HS-1 has a self-contained water reservoir, and is not intended for connection with mains. Operation of this model is automatically controlled by the condition of the air. Price is $98.50.

Third model, HM-1, has the same exterior appearance as do the first two models, but is without automatic controls. Price of this unit is $78.50.

Cabinets of these models are 26 in. high and 15 in. square. They are of wood-grained steel construction, with a grille at the top for emission of moisture.

New Motors Developed By Marble-Card

GLADSTONE, Mich.—New line of single-phase capacitor motors is being introduced by Marble-Card Electric Co. here.

The new motors are similar in construction to a two-phase squirrel cage motor, with a condenser connected across one phase for starting, the condenser being automatically cut out of the circuit by a contactor when the motor comes up to speed.

Condenser and contactor are mounted in a sheet metal box known as the starting unit.

G-E Names 2 Dealers On Air Conditioning

NEW YORK CITY—The air-conditioning department of General Electric Co. has appointed two new dealers, E. W. Crouse Sales Co., Inc., 328 West LaSalle St., South Bend, Ind., and Wausau Plumbing & Heating Co., Wausau, Wis.

They will sell a complete line of G-E air-conditioning equipment, including the small and large oil furnaces.

FEDERAL DESIGNS 3 NEW REFRIGERATORS

MILWAUKEE—Designed by Federal Store Equipment, Inc., of this city for its 1934 line are three new commercial refrigerators—a display case in both top display and double-duty models, a market cooler, and a low-built display case topped with a flat wrapping counter.

The first display case, designated as model 1404, is 35 in. deep, 48 in. high, and is obtainable in lengths ranging from 6 to 14 ft. Bottom of the display section is insulated with 3 in. of corkboard, with 2 in. of the same material in the sides, ends, and back. The case is designed for overhead coils.

Two thicknesses of glass are standard in this case, but three may be obtained at extra cost. Finish on the front, sides, and top is white porcelain, with natural oak at the back. Trays and inside ends are also of porcelain, with the lining of galvanized iron.

Lighting is of the exterior type, encased in a continuous porcelain reflector. Immediately under the case top is the coil space, 9½ in. wide and 5 in. high. Work doors are of the sliding type. The case provides for a single level display arrangement, trays being 29⅛ in. deep.

Federal's new cold storage cooler is of the walk-in type with display space and reach-in doors at the front. Front of the cooler is of white porcelain, with black porcelain base and service door frames. Other exterior surfaces are finished in shellac or gray paint.

Inside, the case has a floor of ⅞-in. edge grained fir. Side walls are of ¾-in. V-joint fir ceiling. The ceiling is of fir sheathing. Behind the service doors is a 15-in. slatted wood display shelf, and a double-cut rail with hooks.

Walk-in door may be placed at either the right or left side of the cooler, is double-gasketed and insulated with 4 in. of corkboard. The cooler's loft system is of the underslung type. Drip pans are insulated with 2 in. of corkboard and are lined with galvanized iron.

The company's refrigerated case with service or wrapping counter (model 1504) is 32 in. deep and 37 in. high. Lengths vary from 6 to 14 ft. Insulation is corkboard. Standard model has one ¼-in. plate of glass 18¾ in. wide. Exterior and interior finish is the same as that of model 1404. Exterior trim is polished metal.

Lighting is of the exterior type, the lamps being concealed beneath the overhang of the wrapping top. Coil space, located under the counter top, is 8 in. wide and 7 in. high. Below the coil space is a drip pan, hung from the top of the case by straps.

The case has swinging work doors. Shelves are of the rod type. Wrapping top is 21 in. wide, and the display area has a 26-in. wide top. Bottom of the storage area is 26 in. wide at the bottom.

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OKr THAT WILL GET ALL THE BEST CONCERNS
I SUGGEST THAT YOU FIRST WRITE TO THE FIRMS THAT ADVERTISE
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1934 REFRIGERATION DIRECTORY

is sure to be on the job for you

"Nothing takes the place of personal contact."—but your salesman can't be everywhere at the same time . . . And how is he going to know, for sure, just when purchases are going to be planned in a prospect's office?

You may know where and when much of your 1934 business is going to break—but 1934 will bring a lot of new business from sources you have not contacted.

The new 1934 REFRIGERATION DIRECTORY AND MARKET DATA BOOK will locate this new business for you.

It will soon be in the hands of buyers and sellers of refrigeration equipment everywhere.

And even if you cannot be present, this Official Guide of the Industry will be "on-the-job" for you wherever and whenever purchases are being planned.

Features of the 1934 Directory

Specifications of all models and all makes of household and commercial refrigerating units.

Statistics—Facts and figures on past sales and methods of distribution.

Classified listing of refrigeration equipment, parts and supplies with names of all manufacturers.

Trade Names of refrigeration products alphabetically listed.

Geographical listing of all manufacturers.

Alphabetic listing of all manufacturers.

GET YOUR COPY READY NOW!

Forms will close Feb. 1, 1934. Wire for rates on inserts, color and preferred positions. Page type size 4½"x7¼". One page, $100. 6 pages, $540. 12 pages, $960. This will be the most useful DIRECTORY AND MARKET DATA BOOK the industry has seen to date. If you have anything to sell manufacturers, distributors or dealers in refrigeration equipment, it will prove the best advertising investment you can make.

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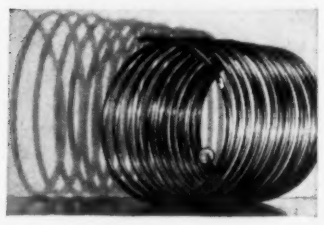
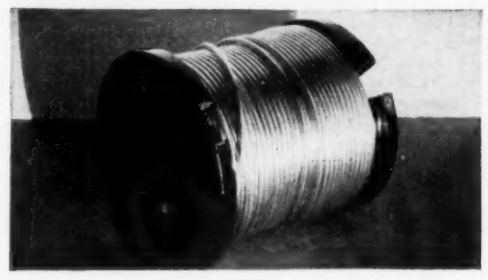


Coil of 60 ft.

Reel of 425 ft.



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LONG LENGTHS

A NEWLY developed process makes possible the production of French Seamless Copper Refrigeration Tubes as large as one-half inch in diameter, in lengths up to 200 feet. Smaller tubes are available in even *longer* lengths. For instance, the one-quarter inch tube illustrated is 425 feet long.

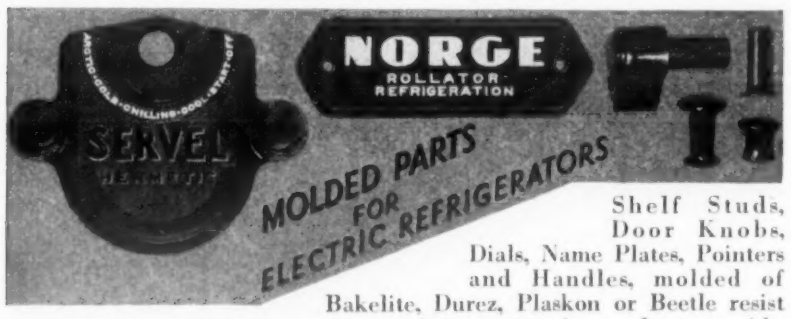
These new *long* lengths materially reduce the risk of failure by minimizing splices. Also the longer lengths reduce scrap losses, as the exact amount required can be cut without waste at the ends.

French De Luxe Copper Refrigeration Tubes are free from oxide and foreign matter. Each coil is *completely* dehydrated, sealed, rigidly tested and reaches you ready for use. For manufacturers who prefer to do their own dehydrating, the French Manufacturing Company produces copper tubes dried (*commercially* dehydrated) with either open or closed ends.

All French Copper Refrigeration Tubes possess the requisite properties for lasting, dependable service. Their grain structure is uniform. These important qualities are in every coil because metallurgical skill, long manufacturing experience and only the best of raw material go into their production. Additional information will be furnished upon request.

THE FRENCH MANUFACTURING CO.
General Offices: Waterbury, Connecticut

FRENCH REFRIGERATION TUBES



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Glad to forward one for comparison with motors of other makes
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Leland Motors

PATENTS

ISSUED NOV. 21, 1933

1,935,749. VACUUM REFRIGERATING MACHINE. Peter Schlumbohm, Berlin, Germany. Application Jan. 12, 1928, Serial No. 246,347, and in Germany Jan. 25, 1927. 3 Claims. (Cl. 62—115.)

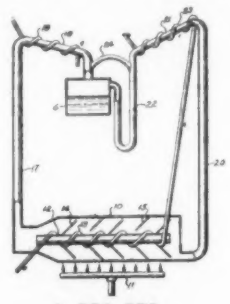
1. A refrigerating machine comprising a vacuum pump and means for driving the same, a refrigerating system connected to said pump including an evaporator, valve means for disconnecting said vacuum pump from said evaporator, a valved conduit for communicating said vacuum pump with the atmosphere, a condenser connected to said pump and said evaporator, other valve means for disconnecting said evaporator from said condenser, means forming a communication between said condenser and said driving means, an air intake provided with a valve for said communicating means.

1,935,866. REFRIGERATING SYSTEM. Eastman A. Weaver, Winchester, Mass., assignor, by mesne assignments, to Stator Refrigeration, Inc., a corporation of Delaware. Application Feb. 11, 1929, Serial No. 339,053. Renewed Dec. 31, 1932. 11 Claims. (Cl. 62—119.5.)

3. In a system of the absorption type, the method of refrigeration which comprises circulating a volatile, alkaline compound as a refrigerant by distillation from and absorption in an absorbent comprising a less volatile, weakly acidic compound circulated through a generator and absorber.

1,936,039. INTERMITTENT ABSORPTION REFRIGERATING SYSTEM. Harry C. Shagaloff, Evansville, Ind., assignor to Electrolux Servel Corp., New York. N. Y., a corporation of Delaware. Application June 19, 1931. Serial No. 545,382. 15 Claims. (Cl. 62—118.)

1. An absorption type refrigerating system for utilizing a plurality of cooling fluids comprising, means defining a closed



1,936,039

fluid circuit, baffles in one portion of said circuit for directing flow over an absorbent for one of the cooling fluids therein, means for alternately heating and cooling said baffled portion, a liquid chamber and a U-tube liquid trap connected in series forming another portion of said fluid circuit, a by-pass conduit over said liquid chamber and trap, and means for cooling said fluid circuit alternately on each side of said by-pass.

1,936,062. HEATING MEANS FOR REFRIGERATING BODIES. Alfred F. Masury, New York, N. Y., assignor to International Motor Co., New York, N. Y., a corporation of Delaware. Application April 13, 1933. Serial No. 665,886. 3 Claims. (Cl. 257—7.)

1. An insulated vehicle body having inlet and discharge ducts formed therein, means to circulate air through the ducts, means to cool the air, a radiator for heating the air, separate passages from the inlet duct to the cooling and heating means, separate passages from the cooling and heating means to the discharge duct, a jacket on the exhaust pipe of the vehicle, and connections for circulating water for heating purposes between said exhaust pipe jacket and the radiator.

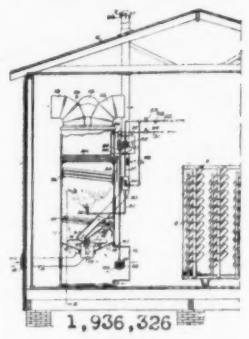
1,936,243. APPARATUS FOR CONDITIONING AIR. Samuel M. Anderson, Sharon, Mass., assignor to B. F. Sturtevant Co., Hyde Park, Mass., a corporation of Massachusetts. Application Sept. 26, 1929. Serial No. 395,402. 3 Claims. (Cl. 183—9.)

2. A unit for air conditioning apparatus comprising side walls having connecting flanges at their top and bottom and at their front and rear to provide an open top and bottom and open front and rear, a screen adjacent the open front, a screen adjacent the open rear, and spraying devices positioned between the side walls and the front and rear screens.

3. Apparatus for conditioning air comprising a chamber through which air is horizontally passed, a screen in the inlet end of said chamber forming a chamber-wall and having a multiplicity of minute cellular interstices through which the air passes in finely divided streams, spraying devices in the chamber so located as to spray liquid forcibly against the inner surface of said chamber wall and in a direction opposite to the flow of air to break up the particles of the liquid into still finer particles on the surface of said chamber-wall and to cause the walls of the minute cells in said chamber-wall to be kept wet, to thereby effect intimate heat transfer contact between air and liquid in finely divided form within the body of said chamber-wall and further to cause a turbulential action within the chamber between the spraying devices and said chamber wall to thereby insure a further intimate contact between the air and the liquid spray before it passes the spraying devices, and another chamber-wall arranged behind the spraying devices so that all the partially cooled air will pass therethrough in making its exit from the chamber, this rear chamber wall being located sufficiently close to the spraying devices to be kept wet by the particles of water entrained in the outgoing air and being constructed with a multiplicity of minute cellular interstices through which the outgoing air passes, and draining means arranged at the lower end of the chamber to receive the drip falling from the lower edges of said two chamber walls and from the chamber itself.

1,936,326. AIR CONDITIONING APPARATUS. William W. Carson, Jr., Knoxville, Tenn., assignor to The Fulton Sylphon Co., Knoxville, Tenn., a corporation of Delaware. Application Jan. 25, 1932. Serial No. 588,803. 22 Claims. (Cl. 257—2.)

1. In an incubator or a like apparatus, a flue for conditioning the air in said apparatus, means for circulating the air



1,936,326

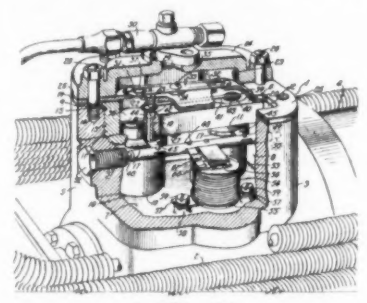
through said apparatus and said flue, a conduit for adding fresh air to said flue, a conduit for exhausting part of the air from said flue to the outside of the apparatus, a nozzle in the flue for producing a spray through which the air must pass to increase its moisture content, a spray nozzle in the exhaust conduit for saturating the exhaust air with water vapor, and a thermostat in the path of the saturated air for controlling the amount of water sprayed in the flue in accordance with the wet bulb temperature of the air in the apparatus.

1,936,402. COUNTER COIL CONSTRUCTION. Thomas B. Mackenzie, Los Angeles, Calif., assignor to Baker Ice Machine Co., Inc., Omaha Nebr., a corporation of Nebraska. Application May 9, 1931. Serial No. 536,149. 3 Claims. (Cl. 62—89.6.)

1. Apparatus of the character described including a machine for circulating a refrigerant, a refrigerator, a coil in the refrigerator, a refrigerant return line leading from the refrigerator coil to the machine, a display case, a coil in the display case, a pipe connecting the machine with the coil in the display case, means connecting the coil in the display case with the coil in the refrigerator, means in the refrigerator for controlling operation of the machine, and means for trapping refrigerant in the coil in the display case.

1,936,411. UNLOADER FOR GAS COMPRESSORS. Albert E. Schneider, Carter Lake, Iowa, assignor to Baker Ice Machine Co., Inc., Omaha, Nebr., a corporation of Nebraska. Application Feb. 11, 1932. Serial No. 592,270. 8 Claims. (Cl. 230—24.)

1. In a compressor, a cylinder housing having a low pressure chamber, a compression cylinder in the housing having a



1,936,411

suction port communicating with said chamber, a valve normally closing said port, a piston operable in the cylinder, a motor operably connected with the piston, a circuit for supplying current to the motor, means in the housing adapted to engage said valve to retain the valve in open position, and an electro-magnet connectible in said circuit for actuating said valve-engaging means during excessive surges of current through the circuit.

1,936,432. METHOD OF AND APPARATUS FOR TEMPERING AIR. John F. Hoffman, Omaha, Nebr., assignor to Baker Ice Machine Co., Inc., Omaha, Nebr., a corporation of Nebraska. Application April 23, 1930. Serial No. 446,655. 10 Claims. (Cl. 62—129.)

1. A method of tempering air of a compartment consisting of passing a tempering member through the compartment, and controlling movement of the tempering member according to the temperature to be maintained in the compartment.

1,936,506. TEMPERATURE CONTROL AND VENTILATING SYSTEM FOR VEHICLES. Mather Garland, Chicago, Ill., assignor to Garland Ventilator Co., Chicago, Ill., a corporation of Illinois. Application Aug. 28, 1931. Serial No. 559,953. 2 Claims. (Cl. 62—117.)

1. In an air-conditioning ventilator for use on external air to enter the vehicle, means in the vehicles, the combination of means to cause path of flow of such entering air to cool the air inflowing through the ventilator, means to exhaust air from the vehicle, a valve to render either one of said air-inlet or air-exhaust means operative singly, said air cooling means being located in the path of at least a portion of said exhausting air, whereby said air cooling means being located in the path of at least a portion of said exhausting air, whereby said cooling means may be defrosted thereby, and means to drain away the water resulting from such defrosting.

1,936,517. WATER COOLER ATTACHMENT FOR REFRIGERATORS. Vernon M. Maine, Rhinelander, Wis., assignor to Rhinelander Refrigerator Co., Rhinelander, Wis. Application Feb. 6, 1932. Serial No. 591,413. 5 Claims. (Cl. 62—38.)

1. A portable cooler including a carrier for detachable engagement with a support, and a dispensing container tiltably mounted in the carrier.

REISSUES

19,007. REFRIGERATION. Baltzar Carl von Platen and Carl Georg Munters, Stockholm, Sweden, assignors to Electrolux Servel Corp., New York, N. Y., a corporation of Delaware. Original No. 1,864,562, dated June 28, 1932, Serial No. 249,357, Jan. 25, 1928. Application for reissue May 31, 1933. Serial No. 674,452. 22 Claims. (Cl. 62—119.5.)

6. In the art of refrigerating with a system of the pressure equalized absorption type, continuously conducting vapor from the generator to the condenser and circulating absorption liquid between the generator and absorber by collecting gas expelled from solution in the generator, separating weak absorption liquid from the generator and applying the pressure of the collected gas to the separated liquid to raise the latter to a level from which it flows to the absorber by gravity.

19,008. REFRIGERATING UNIT. Constance Lane West, Detroit, Mich., assignor, by mesne assignments, to The Crosley Radio Corp., Cincinnati, Ohio, a corporation of Ohio. Original No. 1,898,922, dated Feb. 21, 1933, Serial No. 597,714, March 9, 1932. Application for reissue Sept. 21, 1933. Serial No. 690,404. 12 Claims. (Cl. 62—89.)

1. In combination with a refrigerator cabinet having insulated walls, and having a breaker strip adjacent the opening thereof, a cooling unit setting up circulation of air in said cabinet, a door having a bulged out portion extending forwardly of the front of the cabinet to provide an additional storage space substantially in alignment with the breaker strip and subject to said air circulation within the cabinet.

WESTINGHOUSE ENGINEER GETS SCOTT MEDAL

PHILADELPHIA—The John Scott Medal for scientific achievement this year has been awarded by the city of Philadelphia to Dr. Frank Conrad, assistant chief engineer of Westinghouse Electric & Mfg. Co.

The Scott medal is awarded for inventions useful to mankind in developing industry in any form.

50 LARKIN EMPLOYES ARE INSURED

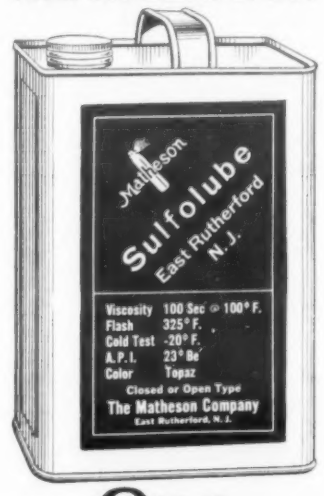
ATLANTA—Fifty employes of the Larkin Refrigerating Corp. here have been granted life insurance in amounts ranging from $1,000 to $2,500.

The group policy was issued by the Prudential Insurance Co. of America, and involves a total of $65,000. It is of the contributory type, the employes paying a part of the premiums.

The Matheson Co

East Rutherford, N.J.

REFRIGERATOR



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NO SOLDERED RETURN BENDS

The first fin coil to eliminate the soldered return bend with its trail of corroded and leaking joints, the PEERLESS now eliminates the soldered reducing nipple on the inlet and outlet connections of the coil. The ⅝" tubing of the fin coil is itself reduced to ½".

NO JOINT—NO SOLDER—NO REDUCING FITTINGS

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For all makes and types of refrigerators. There is a stock near you. Ask for price list and name of your nearest distributor.

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The World's Largest Manufacturer of V-Belts

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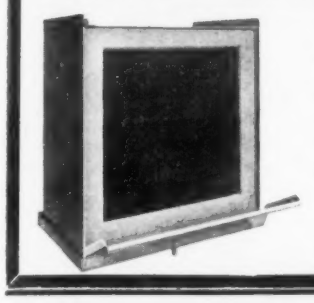

All copper construction, or copper fin steel tube for ammonia systems. Made in five sizes, ranging from 20 to 80 lbs. hourly I.M.E. Housing of sheet brass construction.

Also COMMERCIAL EVAPORATORS for all Refrigerators, DOMESTIC EVAPORATORS, CONDENSERS, SHELF COILS with fins or bare.

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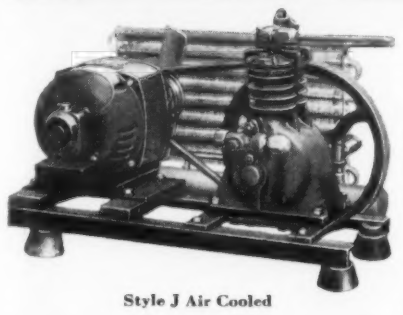

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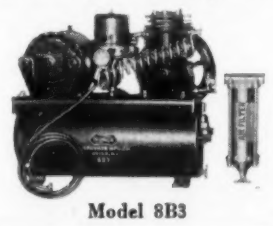

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City and State .....

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STATISTICS

Refrigeration Bureau Estimates Sale of 1,010,245 Household Refrigerators In First Ten Months

The estimates of sales of household electric refrigerators by states during the first 10 months of 1933 which are shown below were made by the Electric Refrigeration Bureau, 420 Lexington Ave., New York City. The compilation is based on reports from local bureaus.

	Years Quota	10 Months Quota—92 Per Cent	Estimated Total Sales	Per Cent Quota Realization
New England Division				
Connecticut	15,316	14,091	17,012	120.7
Maine	6,234	5,735	5,434	94.7
Massachusetts	39,027	35,905	51,424	143.2
New Hampshire	4,009	3,688	3,719	100.8
Rhode Island	6,435	5,920	8,823	149.0
Vermont	2,626	2,416	2,652	109.7
Eastern Division				
Delaware	1,607	1,478	2,249	152.1
Maryland & D. C.	15,944	14,668	26,008	177.3
New Jersey	39,021	35,899	47,598	132.5
New York	123,949	114,033	190,679	167.2
Pennsylvania	68,754	63,254	99,362	157.0
East Central Division				
Kentucky	8,934	8,219	14,115	171.7
Ohio	51,228	47,130	66,087	140.2
West Virginia	6,149	5,657	9,876	174.5
Middle West Division				
Iowa	15,232	14,013	13,173	94.0
Kansas	11,343	10,436	11,630	111.4
Missouri	22,078	20,312	35,783	176.1
Nebraska	7,837	7,210	8,237	114.2
Pacific Coast Division				
Arizona	2,295	2,111	2,331	110.4
California	62,735	57,716	58,249	100.9
Nevada	569	524	989	188.7
North West Division				
Idaho	2,582	2,375	2,242	94.4
Montana	2,785	2,562	3,353	130.8
Oregon	7,893	7,262	7,029	96.7
Utah	3,850	3,542	4,343	122.6
Washington	14,270	13,128	11,527	87.8
South Eastern Division				
Alabama	5,470	5,032	9,473	188.2
Florida	7,687	7,072	9,632	136.1
Georgia	6,537	6,014	11,423	189.9
North Carolina	8,601	7,913	13,642	172.3
South Carolina	3,427	3,153	5,391	170.9
Tennessee	7,830	7,204	9,401	130.4
Virginia	8,733	8,034	14,833	184.6
Great Lakes Division				
Illinois	61,455	56,539	69,614	123.1
Indiana	22,386	20,595	21,925	106.4
Michigan	35,191	32,376	31,037	95.8
Wisconsin	20,689	19,034	17,394	91.3
North Central Division				
Minnesota	15,809	14,544	14,149	97.2
North Dakota	1,996	1,836	1,772	96.5
South Dakota	2,558	2,353	2,361	100.3
Rocky Mountain Division				
Colorado	6,745	6,206	8,210	132.2
New Mexico	1,091	1,004	1,649	164.2
Wyoming	1,045	962	1,335	138.7
Southwestern Division				
Arkansas	3,664	3,371	5,359	158.9
Louisiana	6,525	6,003	7,186	119.7
Mississippi	2,742	2,523	3,166	125.4
Oklahoma	8,346	7,678	11,928	155.3
Texas	20,941	19,266	35,441	183.9
Totals	**802,170**	**737,996**	**1,010,245**	**136.8**

Nema Sales by States for October, 1933

Tabulated below is the geographical distribution by states of October sales of household electric refrigerators made by the 11 companies belonging to the Refrigeration Division of the National Electrical Manufacturers Association.

Companies reporting sales are: Crosley, Frigidaire, General Electric, Gibson, Grigsby-Grunow, Kelvinator, Norge, Servel, Trupar, Universal Cooler, and Westinghouse.

Member companies not reporting statistics are: Merchant & Evans, Stewart-Warner, Sunbeam, Tricold, Uniflow, and Wurlitzer.

STATES and Territories	Quantity of HOUSEHOLD Low Sides
Connecticut	823
Maine	233
Massachusetts	2,485
New Hampshire	171
Rhode Island	366
Vermont	108
New England Total	**4,186**
Delaware	67
Maryland & D. C.	1,313
New Jersey	2,742
New York (State)	13,308
Pennsylvania	2,182
Eastern Total	**19,612**
Kentucky	322
Ohio	1,797
West Virginia	368
East Central Total	**2,487**
Alabama	340
Florida	811
Georgia	193
North Carolina	336
South Carolina	172
Tennessee	356
Virginia	463
Southeastern Total	**2,671**
Illinois	2,232
Indiana	359
Michigan	1,205
Wisconsin	388
Great Lakes Total	**4,184**
Minnesota	432
North Dakota	35
South Dakota	53
North Central Total	**520**
Iowa	413
Kansas	232
Missouri	848
Nebraska	159
Middle West Total	**1,652**
Arizona	41
California	1,940
Nevada	53
Pacific Coast Total	**2,034**
Idaho	60
Montana	69
Oregon	202
Utah	80
Washington	283
Northwestern Total	**694**
Colorado	132
New Mexico	17
Wyoming	22
Rocky Mountain Total	**171**
Arkansas	65
Louisiana	225
Mississippi	109
Oklahoma	90
Texas	1,028
Southwestern Total	**1,517**
U. S. Miscellaneous	13
Total United States	**39,741**
Total Canada	347
Other Foreign (Including U. S. Possessions)	7,638
Total for World	**47,726**

MEMPHIS ENGINEER DESIGNS NEW CONTROL

MEMPHIS, Tenn.—A new type of temperature control for household electric refrigerators has been designed by Thomas K. Marbury, refrigeration engineer of this city. Chief feature of the new control is an automatic defrosting device by which the refrigerator returns to normal operation automatically when defrosting has been completed.

This is done with the control acting on a snap-acting suction line valve on flooded systems, and on an automatic expansion valve on dry systems, Mr. Marbury states.

CLASSIFIED

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RATES: Fifty words or less, one insertion $2.00, additional words four cents each. Three insertions $5.00, additional words ten cents each.

MISCELLANEOUS

A LARGE Wholesale Jobber all makes repossessed refrigerators desires to make contact with distributors throughout the United States. Profits large, investment small. Lifetime opportunity to service men, hardware stores, radio stores, furniture stores and refrigerator dealers as a drawing card for increased business. Box 603.

ENGINEER PREPARES CHARTS ON COMMERCIAL SYSTEMS

CHICAGO—A set of large blueprints showing connections and diagrammatic operation of several different types of commercial refrigeration systems, has been prepared by John Ellison, engineer with the Burge Ice Machine Co., distributor for Baker Ice Machine Co.

With each chart is furnished a complete description and the system, also prepared by Mr. Ellison. Sets of the charts are available at a cost of $1 from Progressive Refrigeration, Room 600, 201 N. Wells St., Chicago, Ill.

The six charts cover: typical meat market installation, an automatic water-cooling system, a self-contained refrigerating unit, refrigerating equipment for a dairy, automatic refrigerating equipment in a brewery, and a combination heating and cooling system.

G-E INSTALLATION

NEWARK—Complete beer-cooling installation has been made in the Hofbrau Haus, Hoboken, by J. L. Mahoney of Philip H. Harrison & Co., G-E distributor here.

STANDARD MAKE NEW & USED REFRIGERATORS

Used Kelvinators	$15 to $25
Used Frigidaires	25 to 35
1933 L-4 Copelands	39 to 59
1933 L-6 Copelands	55 to 70
1932 Electrolux, used,	69 to 85
G.E. used 4 to 10 Ft.	59 up

We also buy new and used standard refrigerators and parts, large or small quantities

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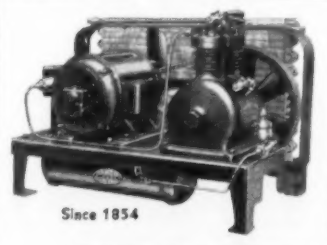

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